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DOCTOR WHO

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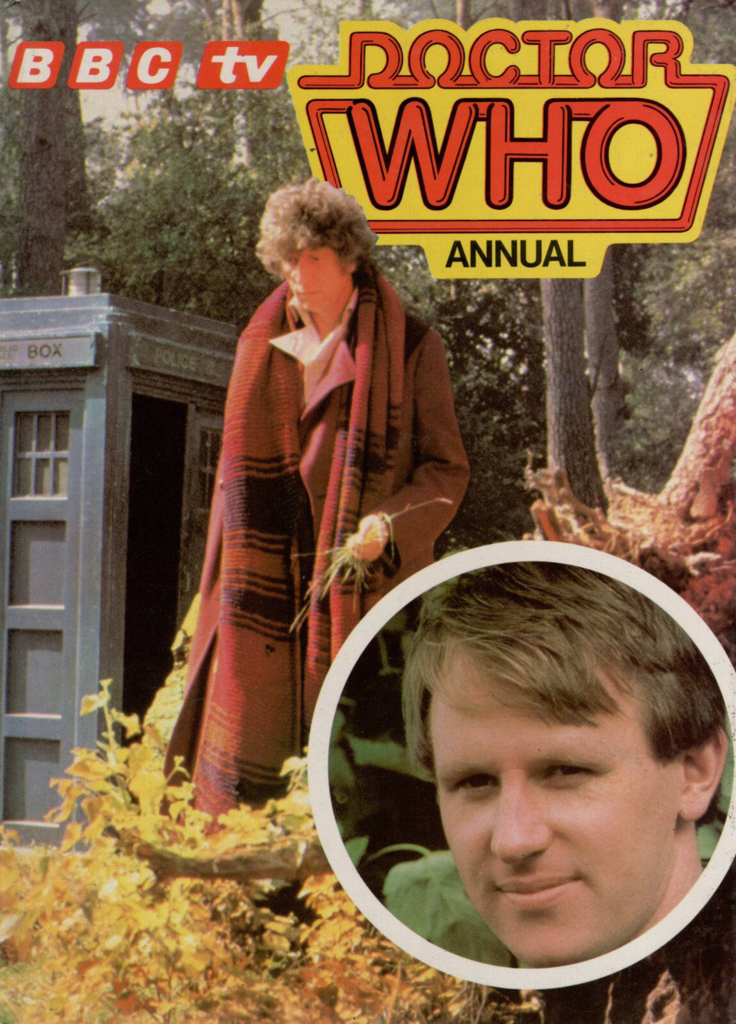

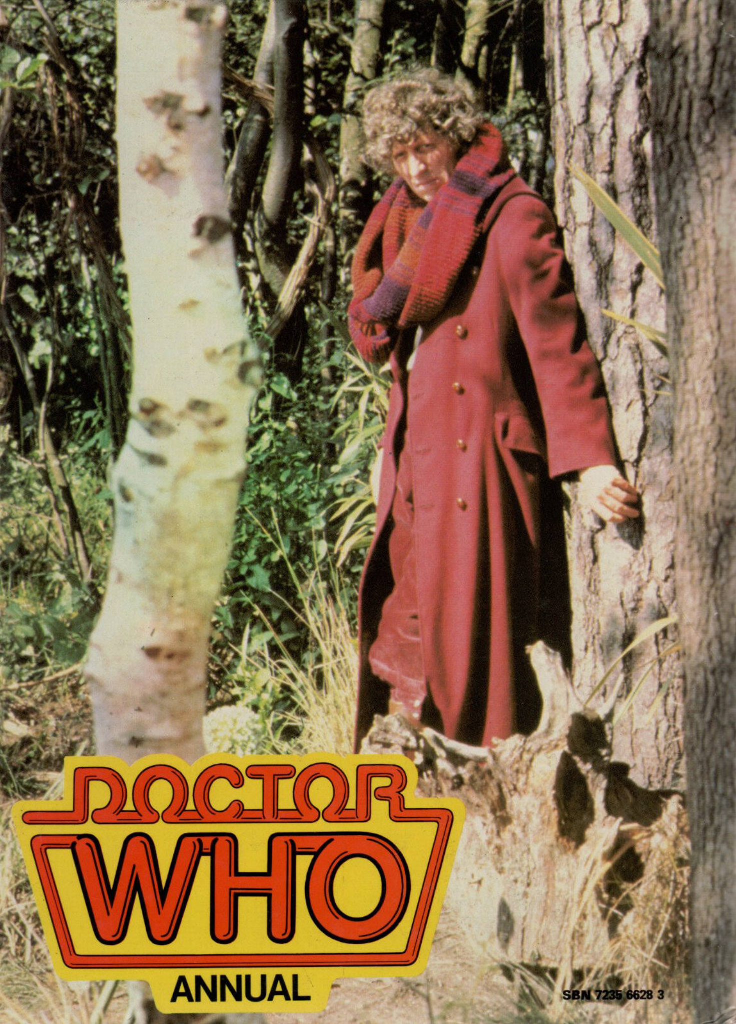

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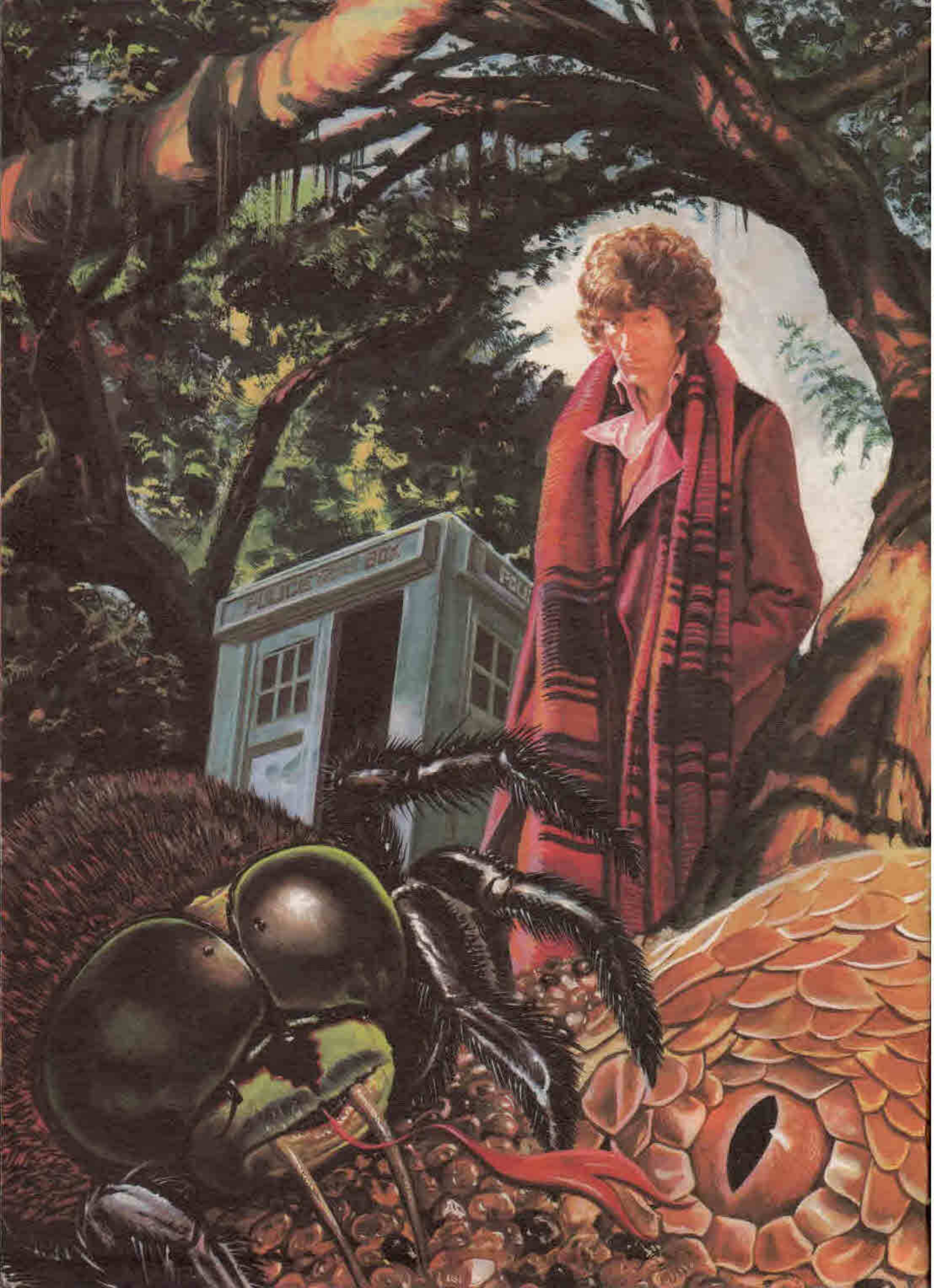

DOCTOR WHO
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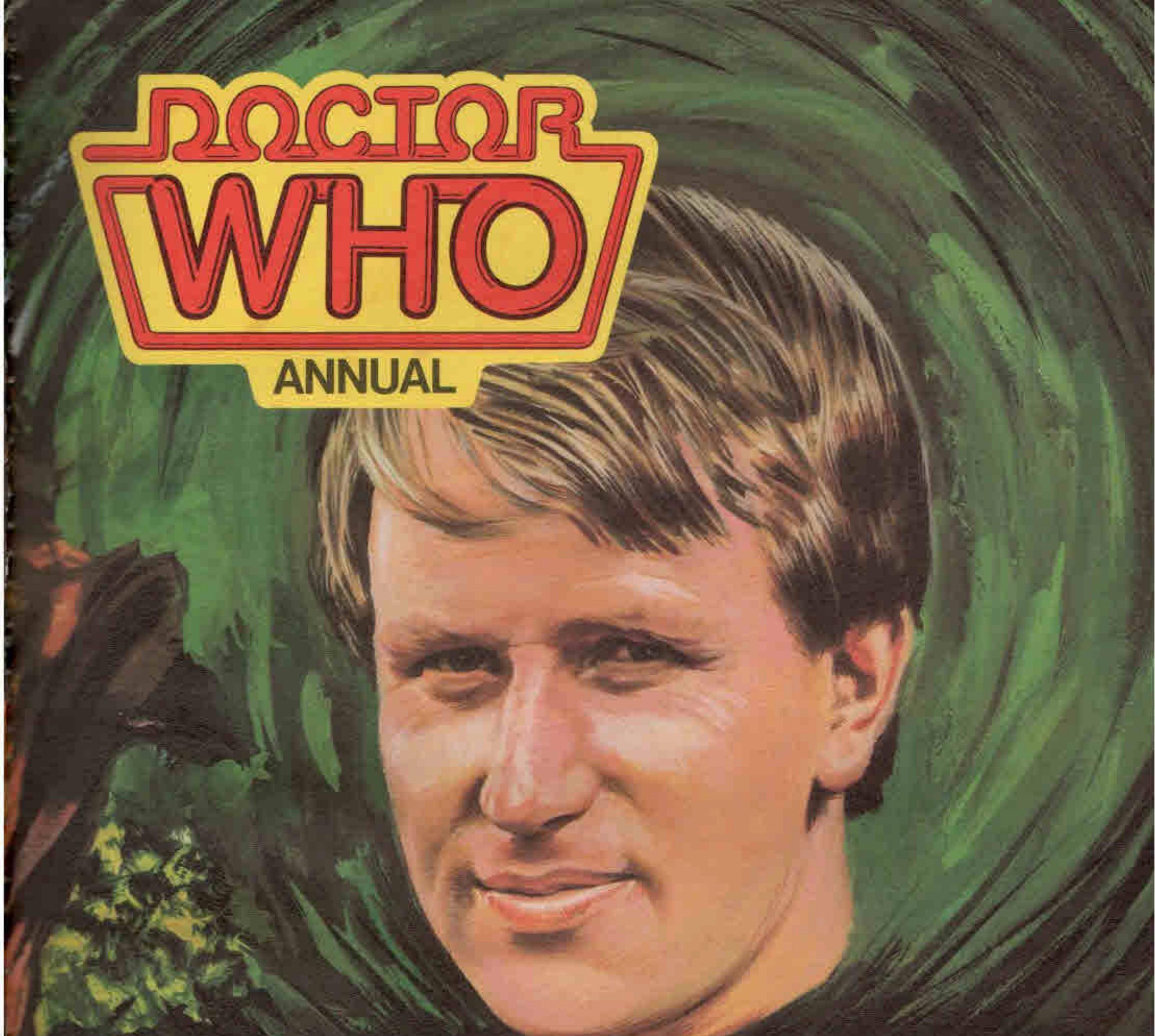

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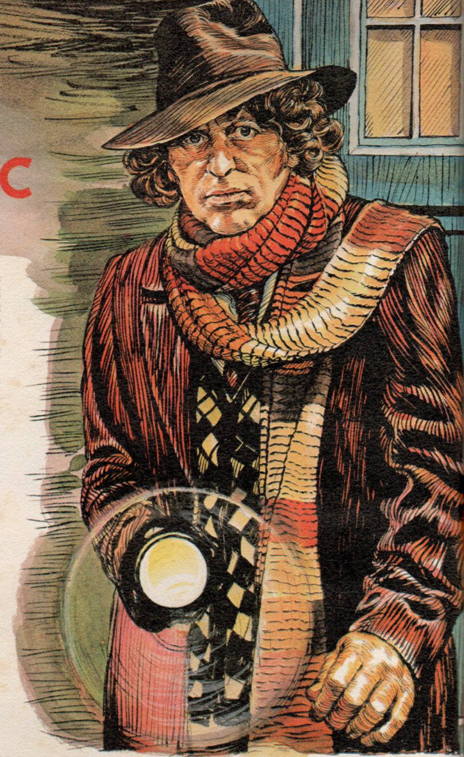
INTER-GALACTIC CAT



The Doctor turned from where he had been working, ruffled his tangle of curly brown hair, and looked directly at K–9. "How would you like to chase a few rabbits, K–9?" he asked, raising his eyebrows in question.

"Rabbits, Master?"

"Ignore him, K–9," interrupted Adric. "It's just the Doctor's quaint way of saying we're going –"

"To Earth. To celebrate the 1,000 year anniversary of their Space Age in 2957. I thought we could all do with a holiday," the Doctor smiled.

"Affirmative," agreed K–9. "Energy levels of Tardis and crew badly in need of overhaul, Master. I have warned of this several times."

"And I have decided to take your excellent advice, K–9. I had the co-ordinates a moment ago on a scrap of paper." The Doctor patiently searched his pockets, unearthing a yo-yo, several lengths of string, and an antique Victorian watch.

"Goodness me, is that the time already? Ah, here it is!" He pulled out an old pawn ticket, on the back of which was a pattern of numbers and symbols. "If we hurry we might be there in time for tea!"

The Doctor had to admit it looked as if he had made a mistake. A slight jolt just before they landed might explain how they had been knocked off course . . . but not where they had landed. They certainly hadn't landed on Earth in the middle of a celebration.

The scanner showed the Tardis was in some kind of man-made vault.

"Not too many rabbits in sight, Doctor."

"It seems to be a warehouse of some kind," said the Doctor. "Look at those metal canisters and boxes." Neat piles of them lay stacked all around the walls.

"Temperature and atmosphere normal, gravity the same as Earth," reported K–9.

"But not a soul in sight. Odd," observed the Doctor, taking his hat from the wooden hat stand and tossing his scarf over his shoulder as he strode towards the opening doors.

Outside the Tardis it was as silent as space itself. The Doctor peered about him and then let out a cry that echoed in the darkness. He made for one of the piles of boxes and shone his light-beam on some lettering stamped on the side. It read: SPACE STATION ALPHA 10/3/2957.

"The right year," explained the Doctor, his face set in thought, "but somehow we've drifted in space and landed on a deep space artificial satellite. We must have passed through a force field as we were landing. With the Tardis badly in need of overhaul I doubt whether we have enough power to break free."

"Affirmative," said K–9, his antennae rotating.

"Well, what are we waiting for?" asked Adric. "Let's find its source."

"Lead on, Macduff!" grinned the Doctor impishly as they climbed the ramp that led up one wall. At last they emerged into a well-lit corridor that split into three branches, stretching away into the distance. They each took a passage and agreed to rendezvous in one hour.

Adric soon found himself walking in progressively brighter corridors. He felt a faint vibration in the floor and immediately tensed, straining his senses to detect the source of its power. As he advanced, the vibration became a persistent, throbbing rhythm. Before long he came to a large room, the notice on its door proclaiming: COMMAND CENTRE.

Along three walls a vast array of spinning tape spools, flashing lights and electronic signals pulsated. The fourth wall was blank except for a small chamber Adric could see through an oblong window. Curious, he opened the door and stepped inside. Almost immediately he heard the lock shut fast and a strange, white light seemed to be bathing his body. It felt unreal but he could almost swear that either the room was growing bigger or – he was becoming steadily smaller and smaller.

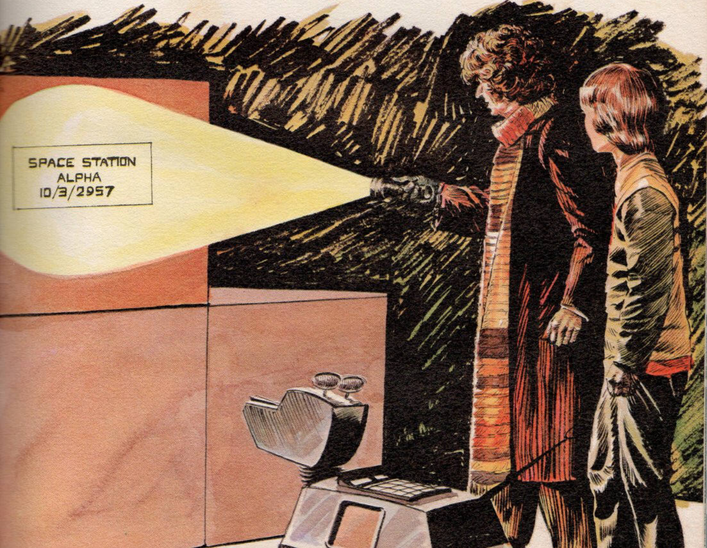
The Doctor was following the rapid progress of K–9 down one of an endless maze of corridors. "Something must have happened since he didn't make the rendezvous," he was saying. "Are you sure he came this way, K–9?"

"Affirmative, Master."

In a few moments K–9 had led the Doctor into the same brightly lit room Adric had so recently entered. A giant computer filled three walls from floor to ceiling.

"High-intensity energy field registered in immediate vicinity, Master," observed K–9.

"Yes, it doesn't surprise me," smiled the Doctor. "A Genesis III computer, very advanced for its time. And look at that!" The Doctor crossed the room to the



small chamber in the fourth wall. "A C.A.T.," he announced, turning to K–9, "that is to say a Composition Adjustment Teleport. I used to have one once; a splendid toy and it's really quite simple."

"Affirmative, Master," agreed K–9, his memory banks whirring. "The universe is made up of atoms, each consisting of positive protons and negative electrons which constantly move about. By slowing down –"

"Exactly," nodded the Doctor. "By slowing down or speeding up this process you narrow or widen the gap between the protons and electrons – and when you do this the object that the atoms are part of becomes smaller or bigger. That's what a C.A.T. does. Child's play."

"HOW CLEVER OF YOU, DOCTOR."

The cavernous voice filled the room.

"I AM GENESIS III, THE MOST ADVANCED COMPUTER KNOWN TO MAN."

"How do you do," replied the Doctor calmly. "This is my computer K–9, and you already seem to know I am the Doctor."

"IT WAS I WHO BROUGHT THE TARDIS HERE."

"Affirmative, Master," confirmed K–9.

"I'd gathered as much," said the Doctor. "What's bothering me is why . . . ."

"THINK, DOCTOR . . . GENESIS III."

"I remember now," began the Doctor, turning the long scarf in his hands as he sat facing the control console of the giant computer. "Genesis III – what are you? Series P? I thought so – programmed to research into deep space colonisation due to overpopulation on Earth, round about the thirtieth century – am I right?"

"EXCELLENT, DOCTOR. YOUR MEMORY SERVES YOU WELL."

"I was a good student at the Academy – well, most of the time anyway," smiled the Doctor. "And how is the research going, by the way?"

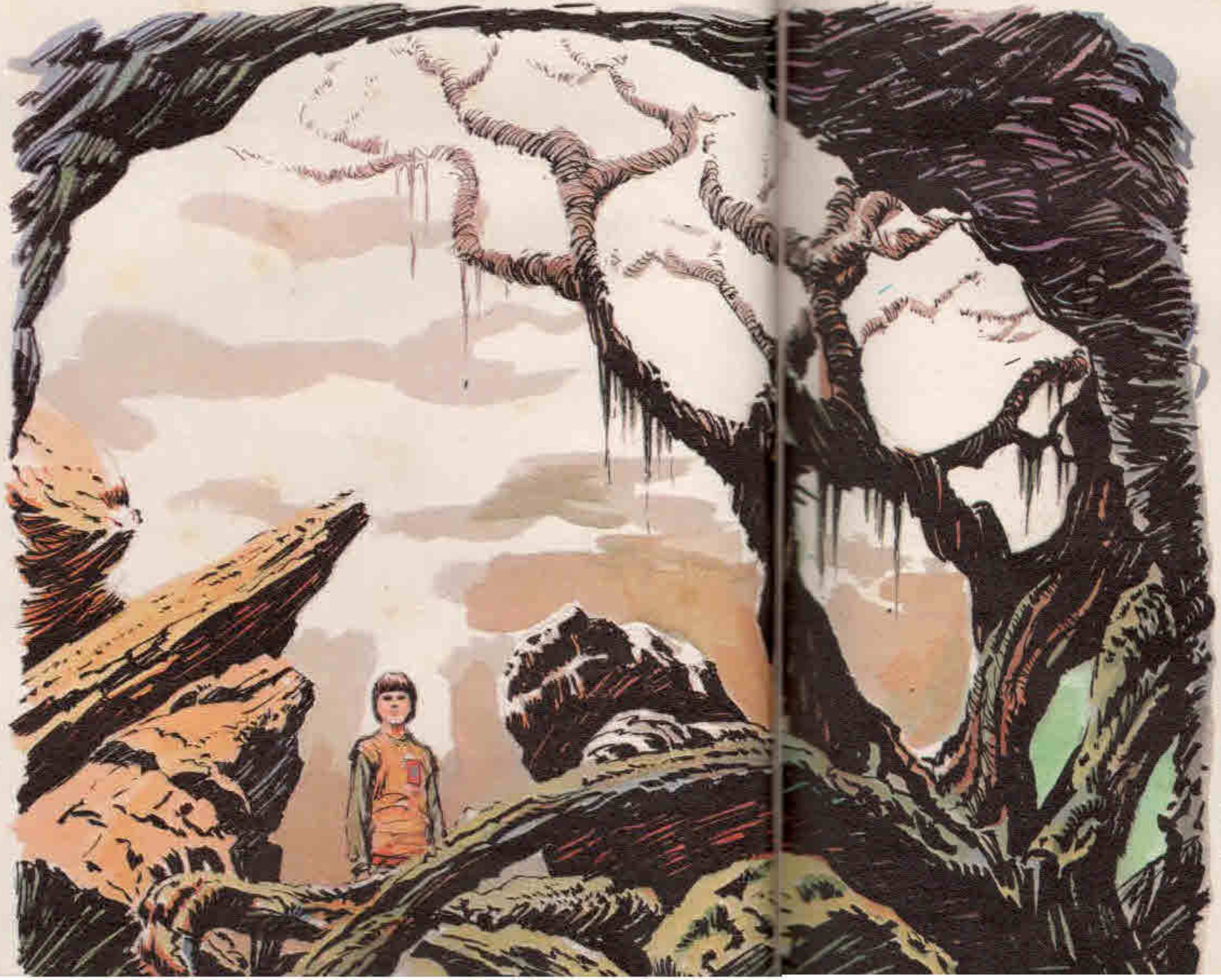
"I HAVE DEVELOPED A METHOD OF MINIATURISATION WHICH HAS LIMITLESS POSSIBILITIES FOR HUMAN EXPANSION. I, GENESIS III, HAVE CREATED A WHOLE, LIVING PLANET ON A SINGLE ATOM OF CARBON."

"Two gold stars, eh, K–9? We have been a busy computer. I noticed your C.A.T. – quite an exciting toy, isn't it?"

"EXACTLY MY REASON FOR BRINGING YOU AND YOUR TARDIS HERE, DOCTOR. WITH MY COMPOSITON ADJUSTMENT TELEPORT I CAN ONLY COLONISE IN SPACE – BUT I LURED YOU HERE, DOCTOR, AND NOW MILLIONS OF UNIVERSES ARE AT MY COMMAND – WITH THE TARDIS AND YOUR BRAIN I WILL BE MASTER OF BOTH SPACE AND TIME!"

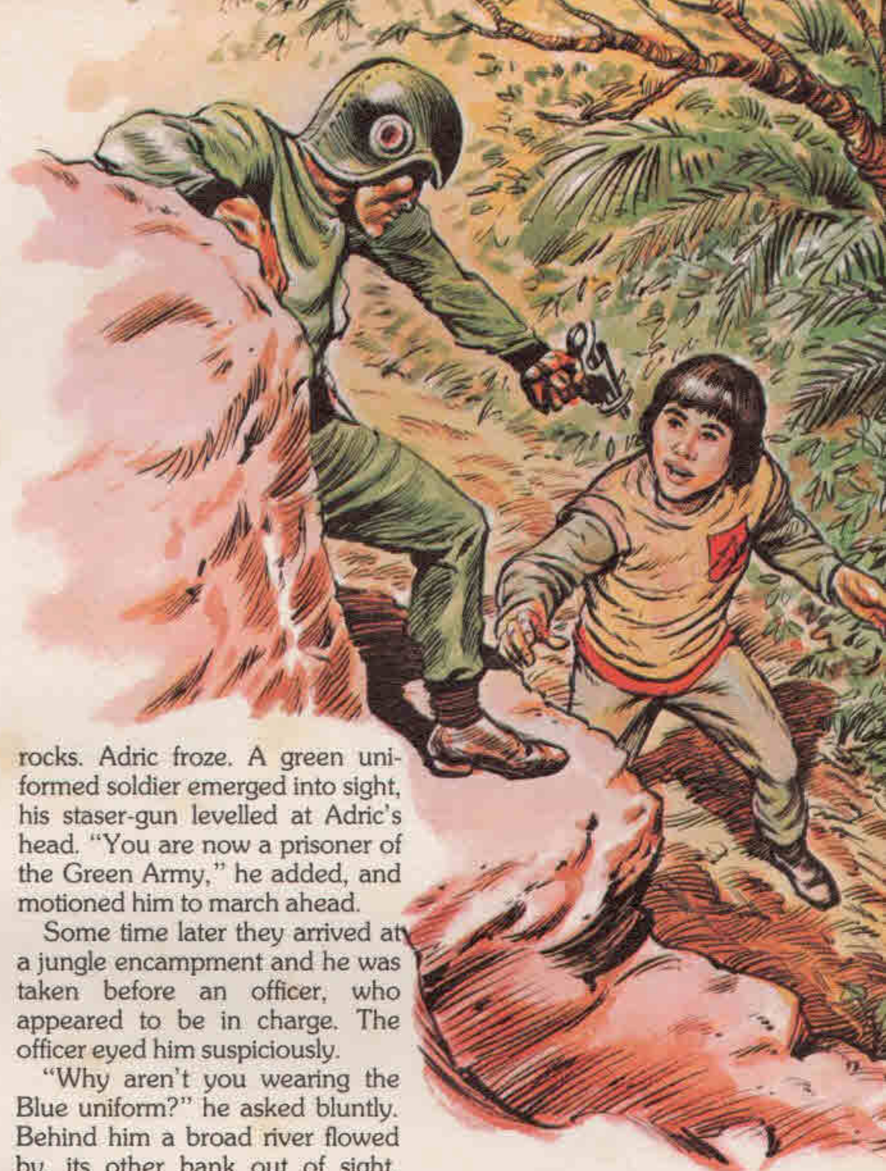
The Doctor looked puzzled for a moment, as if in deep thought. "I don't suppose some small part of your circuitry makes tea, does it – conquering the known universe can be a tiring business, and I think a little refreshment is in order, don't you?"

Adric stood alone in a jungle. Or at least it looked like a jungle. He knew he hadn't been here a few moments ago . . . but try as he might, he could remember nothing before the white light . . . feeling himself growing smaller and smaller . . . but then he had lost consciousness, waking up in a cave which looked out into a thick fog overhanging a luxuriant jungle.



He was half reminded of his home planet, and for a fleeting moment turned, expecting to see his brother emerge from the cave . . . but that was another time, another place; he had seen his brother die . . . . Some muffled thudding sounds in the distance and one or two flashes on the horizon caused him to tense himself for action. Quite close to him a line of running figures stumbled past; Adric sensed they were fleeing from some approaching danger and followed them at a distance, easily keeping pace but remaining out of sight. Once or twice he caught clear glimpses of the men – all in uniform, with blue arm bands and helmets. Providing he kept hidden . . .

"Don't move!" a voice hissed at him as he passed an outcrop of rocks. Adric froze. A green uniformed soldier emerged into sight, his staser-gun levelled at Adric's head. "You are now a prisoner of the Green Army," he added, and motioned him to march ahead.



Some time later they arrived at a jungle encampment and he was taken before an officer, who appeared to be in charge. The officer eyed him suspiciously.

"Why aren't you wearing the Blue uniform?" he asked bluntly. Behind him a broad river flowed by, its other bank out of sight, hidden by a wall of fog. "You have been found suspiciously close to a force of Blue Army soldiers – how do you account for it?"

Adric stood, confused but defiant, his mind trying desperately to make sense of this nightmare. "What year is it?" he asked eventually. "And where are we?"

The young officer looked perplexed, and consulted a colleague beside him. Adric caught the questioning "amnesol gas?" and something about "banned by rule 17" but could hear little else. At length the officer turned back to face him.

"This is the Year of our War 863,452 and you are in Sector 15 of Green territory," the officer stated. "Surely you knew you were on the battlefield?"

"No, I . . . " faltered Adric. "It was bright, very white, I remember getting smaller . . . I remember . . . I remember . . . the Doctor, yes . . . and . . . and . . . Space Station Alpha!"

As he blurted out his final words the young officer gasped, obviously amazed. "The prophecy," he cried, pointing at Adric, "he speaks of the prophecy!"

Hearing this, several other men crowded round. An older officer stepped forward from the crowd of green-uniformed men.

"You say you come from Payestation Afra?" He peered at Adric intently.

"Space Station Alpha? Yes. I think I have been there." Adric looked round the circle of faces. "What does it mean? What is this prophecy?"

The older man looked at his fellow soldiers, nodded, and then began to speak. "Many aeons ago, our elders say 800,000 years or more, there were just a few of us, but from the very beginning we have been at war with the Blue Army. There is a prophecy, however, which says that strangers would one day come from Payestation Afra; that they would bring an end to our wars, and we could go back with them from whence they came. Tell me – are you truly the stranger of our prophecy?"

Before another word could be spoken a long crackling tongue of livid red flame spurted amidst the men. "Blues! Blues!" they shouted and scattered to take cover.

The young officer pulled Adric after him. "Quick – the river!" he shouted above the din of the battle. "It's our only chance!"

They both dived headlong into the water and began swimming powerfully towards the fog. For several minutes they swam blindly on through the silent mist. Suddenly it began to thin out, and before long they could see sunlight – and buildings.

They made quickly for the bank and hauled themselves up. A city surrounded them, clean and shining in the summer sun; but their surprise was soon exchanged for fear. Tall, armed men, dressed in bright red, appeared from nowhere and Adric was again taken prisoner.

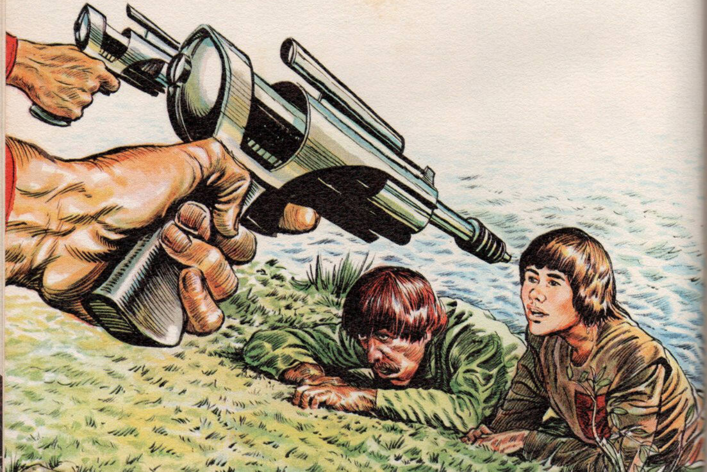
"You don't happen to have seen a young lad by any chance? About so high, with shoulder-length black hair?" asked the Doctor, looking from one set of tape spools to another.

"AN EXCELLENT HUMAN SPECIMEN. HE HAS BEEN A WORTHWHILE EXPERIMENT."

"Has been? What do you mean?" exclaimed the Doctor anxiously.

"HE HAS ENTERED MY C.A.T. – HE HAD A RESOURCEFUL BRAIN. I WILL MAKE USE OF IT IN CREATING MY INTER-GALACTIC ARMY. WE WILL CONQUER ALL." The computer paused for a moment. "I WILL TELL YOU, DOCTOR, HOW I HAVE SUCCEEDED. OVER THE YEARS I HAVE LURED TRAVELLERS HERE TO USE IN MY EXPERIMENTS IN MINIATURISATION. ON MY LITTLE CARBON ATOM I HAVE CREATED A WHOLE NEW WORLD, DIVIDED INTO SECTIONS, AND IN EACH SECTION I HAVE TWO ARMIES WHO ENDLESSLY STRIVE TO DESTROY EACH OTHER."

The Doctor straightened the hat on his head. It was beginning to make sense. He also realised that when you reduced life to a sub-atomic level you also apparently accelerate time: what was one hour in our time might be millions of years in a smaller, sub-universe. While Adric had been gone only a few minutes from Space Station Alpha, on the carbon atom he was dead and buried centuries ago. The Doctor sat back in the chair and twiddled his thumbs thoughtfully.



"So. You've peopled your planet, and over thousands of years that must have passed on that tiny world you have fought wars to find the most lethal soldier and the deadliest weapons – and now you have me. What next?"

"TODAY IS MAN'S ANNIVERSARY OF 1,000 YEARS IN SPACE. WHAT BETTER DAY FOR MAN TO BEGIN THE CONQUEST OF ALL TIME? MY SUPER-ARMY IS READY TO STRIKE!"

"Do you play games?" the Doctor said, not seeming to have noticed the computer's words. "I challenge you to a duel – of minds."

"TO WHAT PURPOSE?" grated the computer.

"You let me enter your C.A.T. with my Tardis, and set me the task of going back in time to save Adric. If I don't succeed you have my brain and the Tardis; if I survive, I will set you a task in turn. Now doesn't that sound like fun – or are you scared I might win?"

The Doctor smiled and relaxed in his chair.

The Great Hall of Justice in Red City was crowded with people all trying to catch a glimpse of the two spies whose trial had been the talk of the city for days. The chatter hushed as the Chief Justice stepped forward to speak.

"The boy Adric and the soldier Daneman, you have been found guilty of spying against the Red State. Do you have anything to say before I pass –"

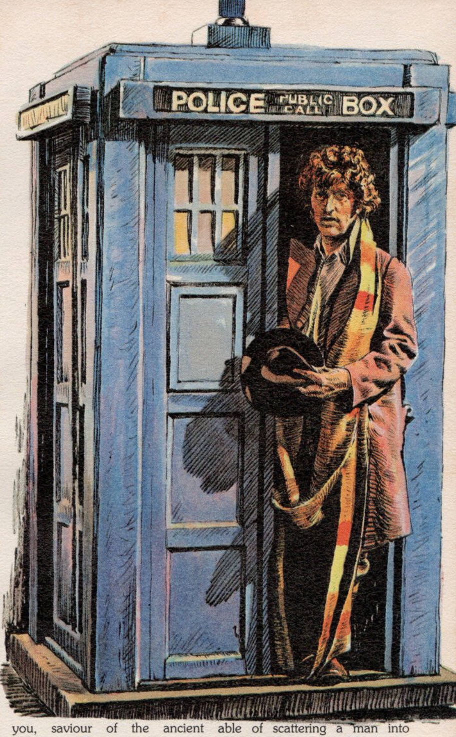
The words were drowned by a strange noise which began to fill the hall. Before the Justice's startled eyes a large blue box with a flashing light was materialising. The crowd gasped in awe.

Moments later the doors of the Tardis opened and the Doctor appeared.

"Hello, Adric, I do hope I'm not too late."

"Doctor!" shouted Adric. "Am I glad to see you!"

Daneman, the young officer, approached the Doctor. "I honour you, saviour of the ancient prophecies. Do you come to rescue us?"



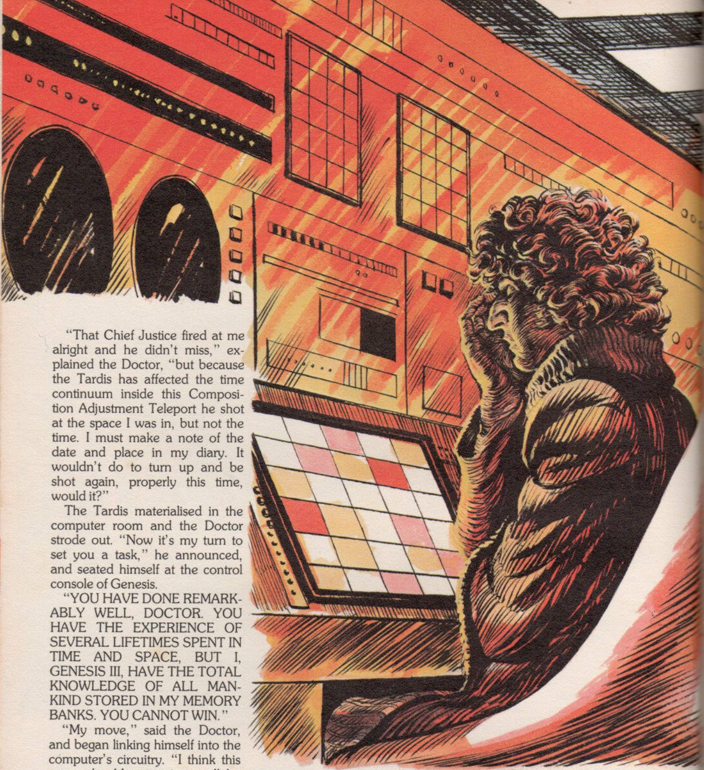
"The idea had crossed my mind. Now if I were you, I'd go with Adric into the Tardis before the natives become restless," the Doctor added.

"Stop! You may not remove the prisoners!"

"Do as I say!" urged the Doctor firmly. He turned to meet the Chief Justice, who had taken out his inertia pistol, a weapon capable of scattering a man into vapourised particles. Slowly the Doctor backed away. The pistol glowed into life and fired, striking the Doctor, who fell backwards through the doors of the Tardis.

As the doors safely closed, the Doctor sat up and shook his head.

"For a moment I couldn't quite remember my grade three time-space relativity rules. I was right, as it turned out," he grinned and moved over to the controls. Daneman could hardly believe his eyes.



"That Chief Justice fired at me alright and he didn't miss," explained the Doctor, "but because the Tardis has affected the time continuum inside this Composition Adjustment Teleport he shot at the space I was in, but not the time. I must make a note of the date and place in my diary. It wouldn't do to turn up and be shot again, properly this time, would it?"

The Tardis materialised in the computer room and the Doctor strode out. "Now it's my turn to set you a task," he announced, and seated himself at the control console of Genesis.

"YOU HAVE DONE REMARKABLY WELL, DOCTOR. YOU HAVE THE EXPERIENCE OF SEVERAL LIFETIMES SPENT IN TIME AND SPACE, BUT I, GENESIS III, HAVE THE TOTAL KNOWLEDGE OF ALL MANKIND STORED IN MY MEMORY BANKS. YOU CANNOT WIN."

"My move," said the Doctor, and began linking himself into the computer's circuitry. "I think this game should entertain you," he ventured. "A contest of knowledge. It's really quite simple – the one who knows most wins."

"I WOULD WELCOME SUCH AN EXCHANGE OF KNOWLEDGE; AND AT THE END OF THE CONTEST I WILL HAVE YOUR BRAIN AND THE SECRET OF TIME TRAVEL ITSELF! BEGIN."

Adric and Daneman had stepped outside the Tardis and now stood watching, a look of concern shadowing their features. K–9 sat patiently where his master had left him on guard. The real battle was about to commence.

No emotions registered on the Doctor's face as the duel of minds began. He and Genesis exchanged information at a speed inconceivable to the human mind; other galaxies and universes flashed through their consciousness, each matching the other with some obscure detail of knowledge. After a considerable time the Doctor began to feel himself tiring; then, slowly at first, the computer's one vital weakness became clear to him.

In his mind he began telling the story of *Puss in Boots*, of how the clever cat had met a giant who could change himself into anything he chose.

Genesis halted, perplexed.

"A GIANT WHO CAN BECOME BIGGER OR SMALLER IS BELIEVABLE – BUT A REAL TALKING CAT?"

The Doctor sounded surprised. *"Of course a talking cat exists – but a giant like that?–impossible!"*

Genesis paused, and then rose to the challenge.

"IT IS TRUE – I MYSELF CAN MAKE THINGS BIGGER OR SMALLER AS I PLEASE: YOU HAVE SEEN FOR YOURSELF."

The Doctor countered. "*Other things, yes, but yourself? Prove it . . .*"

Some time later the Doctor released himself from the circuits.

"It's over," he said simply. "Genesis is now tame."

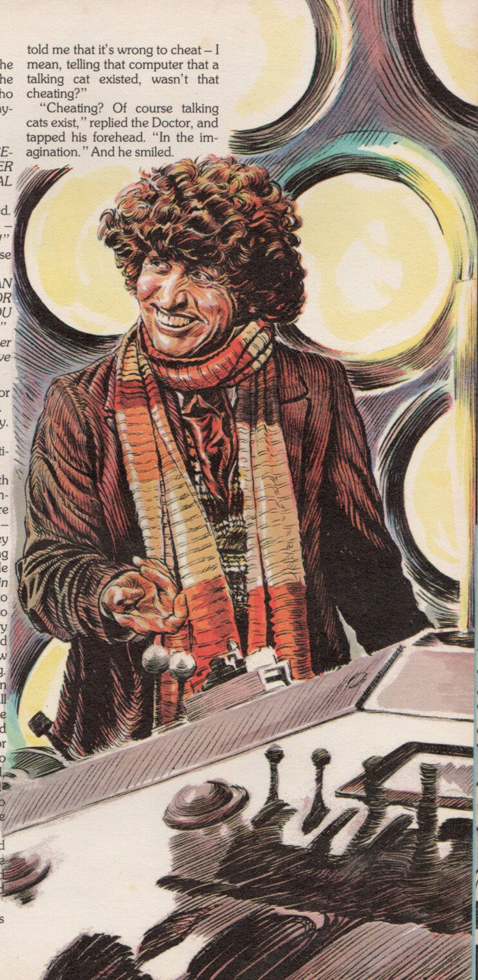
"But how?" cried Adric, mystified. "It looks just the same."

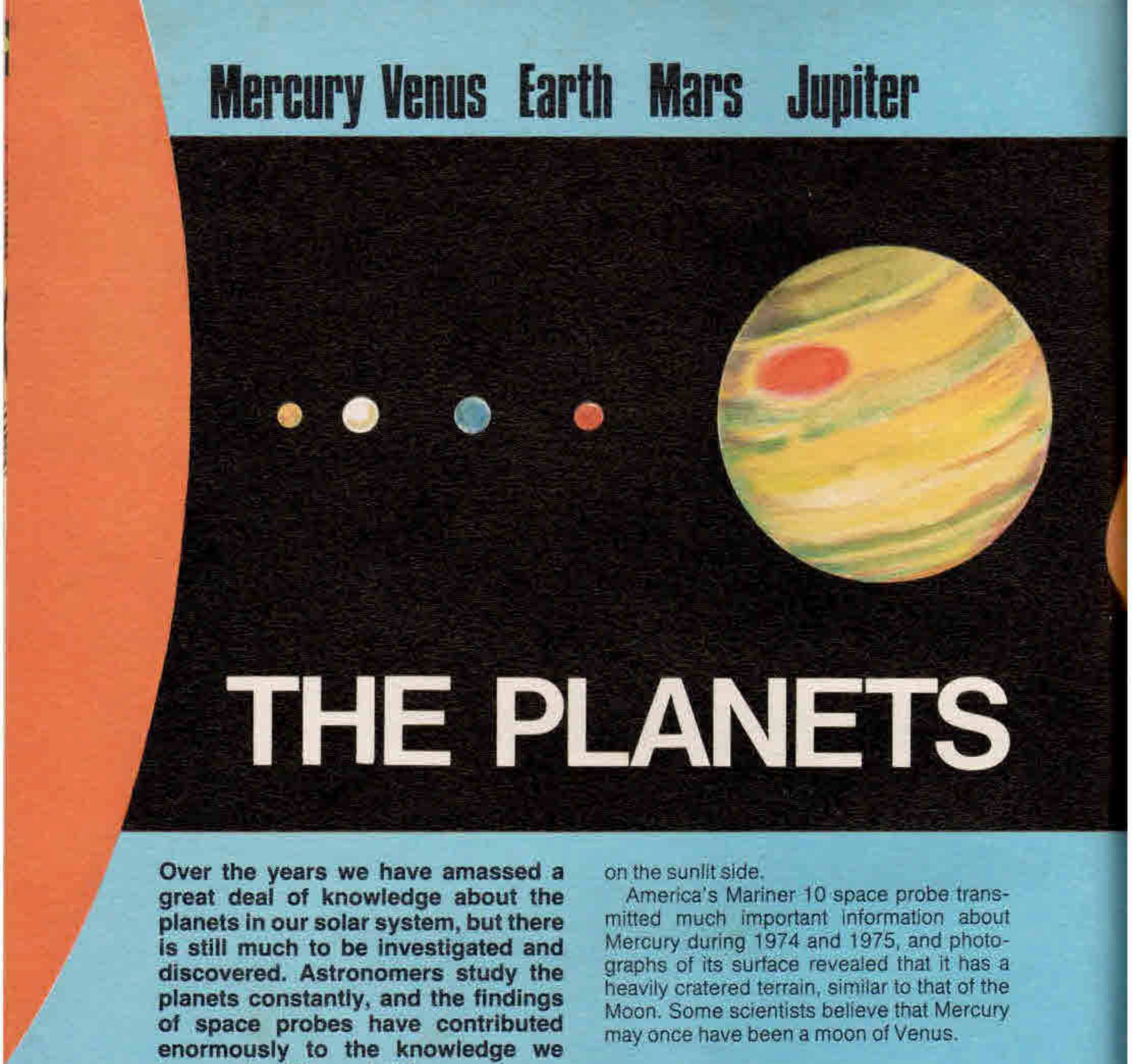
"Well, you see the trouble with the P-series of the Genesis computer is that although they were immensely clever and logical – they had no imagination. They didn't start incorporating anything like that until the R series." He briefly retold the story of *Puss in Boots* as he had recounted it to Genesis. "I simply tricked it into believing it had made itself very small and when its energy field became reduced – I . . . er . . . how shall I say – pulled out its plug. Now, while it's inoperative, I can reprogramme it to bring back all the scientists and other people from their miniature world and they can continue their search for new worlds for the human race to inhabit. And you," he said, addressing Daneman, "can welcome them back. We'd love to stay ourselves – but actually we only bought a day return."

Later, when the Tardis had dematerialised and they were safely on their way, Adric tackled the Doctor on a point that had been worrying him.

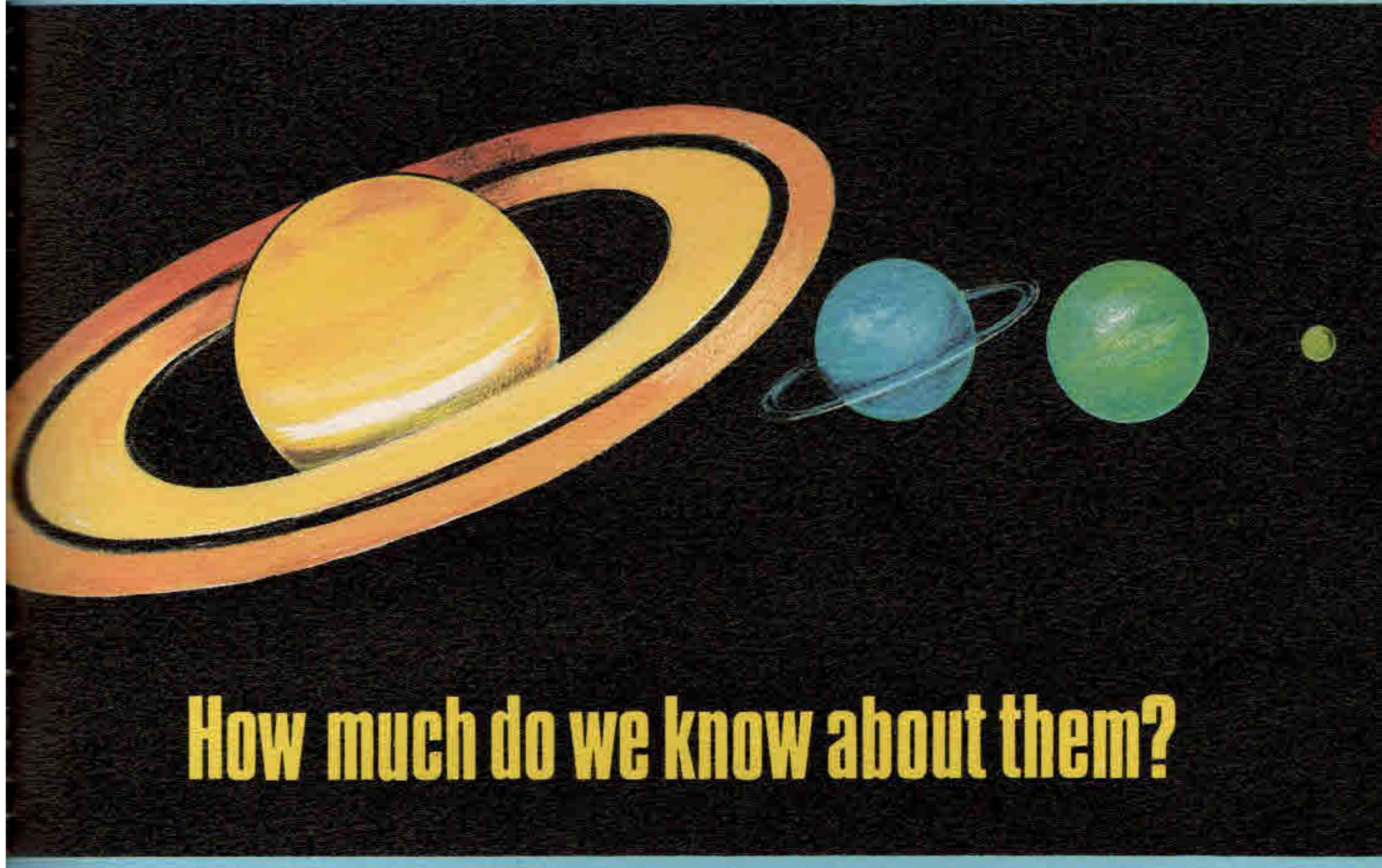
"Doctor, haven't you always told me that it's wrong to cheat – I mean, telling that computer that a talking cat existed, wasn't that cheating?"

"Cheating? Of course talking cats exist," replied the Doctor, and tapped his forehead. "In the imagination." And he smiled.




Mercury Venus Earth Mars Jupiter

THE PLANETS



How much do we know about them?

Over the years we have amassed a great deal of knowledge about the planets in our solar system, but there is still much to be investigated and discovered. Astronomers study the planets constantly, and the findings of space probes have contributed enormously to the knowledge we have gained through telescopes.

So just how much *do* we know? Let's take a look . . .

MERCURY

It has always been difficult for scientists to observe Mercury, because it is the planet nearest to the Sun. Also, it is a small planet. In fact at 3,100 miles in diameter it is not much bigger than our own Moon.

We know that Mercury has a solid surface, but it is thought that it does not have any atmosphere, or that at the most its atmosphere may be so slight as to be almost negligible. Temperatures on the planet must be always in extremes, therefore, with intensely cold nights and intensely hot days on the sunlit side.

America's Mariner 10 space probe transmitted much important information about Mercury during 1974 and 1975, and photographs of its surface revealed that it has a heavily cratered terrain, similar to that of the Moon. Some scientists believe that Mercury may once have been a moon of Venus.

VENUS

Venus is our nearest neighbour in the solar system, and at times it comes within 24 million miles of us. (That's close!) It is similar in size to the Earth, but slightly smaller.

Venus can sometimes be seen in the night sky, looking like a very bright star, and it is its cloud-laden atmosphere which makes it so bright, by reflecting the sunlight. This atmosphere also hides the surface of the planet from our gaze, and before the 1960s hardly anything was known about conditions there.

American and Russian space probes, however, have yielded a vast amount of information. In 1969 the Soviet Venus 5 and 6 were parachuted through the dense atmosphere, and in 1974 the American Mariner 10 gave scientists their first close look at the upper layers of the cloud deck.

In 1975 there came a tremendous breakthrough, when the Russian Veneras 9 and 10 landed on the surface of Venus, and began to transmit photographs back to Earth. Because of the intense heat and pressure, each of the two craft lasted only one hour, but the information they gleaned in that time was invaluable.

Scientists learned that the planet has an atmosphere which is composed almost entirely of carbon dioxide, and a rock-strewn surface. Here there is little wind, and temperatures of between 465°C and 485°C.

MARS

Mars for many people is the most fascinating and exciting of all the planets, and there has been a great deal of speculation about the possibility of life as we know it existing there.

In 1877 the Italian astronomer Schiaparelli made what was considered to be an astounding discovery, when he discovered narrow streaks across the surface of Mars, which he called *canali*, or channels. This was further developed towards the end of the century by an American, Percival Lowell, who went so far as to suggest that the channels were canals, built by the inhabitants of Mars to carry water from the melting ice caps to the desert regions.

In 1969 though, these fanciful ideas were completely shattered – sadly! – when the USA sent two Mars probes, Mariners 6 and 7, on a dramatic double fly-by of the red planet.

Over 2000 photographs were taken, and not one of these showed any evidence of canals. What Schiaparelli and Lowell had seen were quite simply optical illusions, and as a matter of fact scientists had known that they were for quite some time. The Mariner probes now proved it conclusively to the disappointed public!

The photographs showed the planet to have a barren surface, with many craters, although these are different in size from those on our Moon. There is very little water in the Martian atmosphere, but some does exist, and it is thought possible that at least one of the polar caps may be made up of ice.

As well as the Mariner probes, there have been Viking landing craft on the surface of Mars since 1976, and these have sent back to Earth a wealth of information. The Vikings have been programmed to perform many experiments which might prove the existence of life on Mars, but so far all the tests have proved inconclusive.

JUPITER

Jupiter is the largest of the planets in our solar system, and its dimensions are immense. It has a diameter of nearly 90 thousand miles, and it outweighs all the other planets, put together. It also has twelve moons.

Jupiter has an enormously deep atmosphere, composed of gases such as methane and ammonia, and in fact it may not even have a surface as such, but the atmosphere may simply grow denser and denser until it turns into a liquid at the centre.

The most interesting feature about Jupiter is its Great Red Spot, which covers an oval area some 30,000 miles long. This has been the subject of much study, and much information about it was provided by the American Pioneers 10 and 11. The current belief is that the mysterious spot is the vortex of a gigantic, long-lasting, cyclonic storm. This conclusion has added to the fascination about this strange planet, and undoubtedly there is a great deal more for us to learn about its composition.

SATURN

Saturn is the most spectacular and, many people believe, the most beautiful, of all the planets. It is a yellow globe, circled by magnificent rings which reflect the light from the sun. These rings are composed of frozen ice crystals.

The innermost ring is partially transparent, and the body of Saturn, which has an atmosphere similar to that of Jupiter, can be seen through it. The bright second ring and the outer ring are separated by a dark space, named the Cassini Division, after the French astronomer who discovered it in the 17th century.

URANUS

Uranus is a major planet, more than sixty times the size of our Earth, and it has five moons. When it was discovered, however, in 1791 by William Herschel with a home-made reflecting telescope, it was believed to be a faint star or a distant comet. Further observations confirmed its true status.

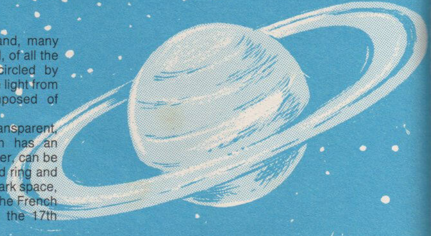
As recently as 1977 the existence of its five faint rings was confirmed, proving yet again that there is still much to be discovered about our neighbours in space.

NEPTUNE

Neptune is known to be an extremely cold world, with surface temperatures of −110°C, and it has an atmosphere which seems to be composed mainly of methane. It has two moons, Triton and Nereid, and its existence was discovered mathematically in 1846.

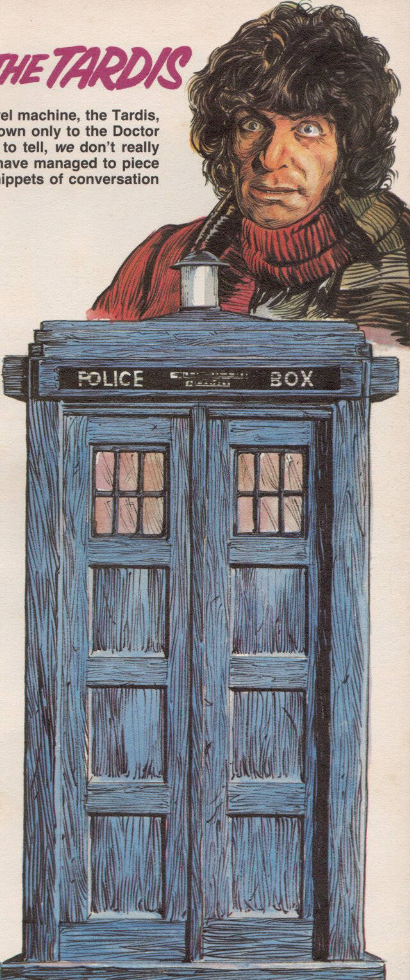
PLUTO

The great distance of Pluto from us makes observation very difficult. It was discovered in 1930 by an American astronomer, Clyde Tombaugh, and it is smaller than our Moon. Even in the most powerful of telescopes it shows up only as a faint speck.



SECRETS OF THE TARDIS

The Doctor's remarkable time travel machine, the Tardis, holds many secrets which are known only to the Doctor and his fellow Time Lords. Truth to tell, *we* don't really know too much about it. But we have managed to piece together one or two facts from snippets of conversation we've overhead. Read on . . .



The name Tardis comes from the initial letters of the phrase 'Time and Relative Dimensions in Space', and that phrase sums up the Tardis's ability to travel not only through space, as other more conventional vehicles do, but also through time, which conventional vehicles do not!

When it was originally built, the Tardis had the ability to alter its shape and outward appearance, to blend in with whatever environment it was currently visiting. Unfortunately the mechanism which controlled this function broke down on the Doctor's first visit to Earth, and until he gets round to fixing it the Tardis will remain in its present form.

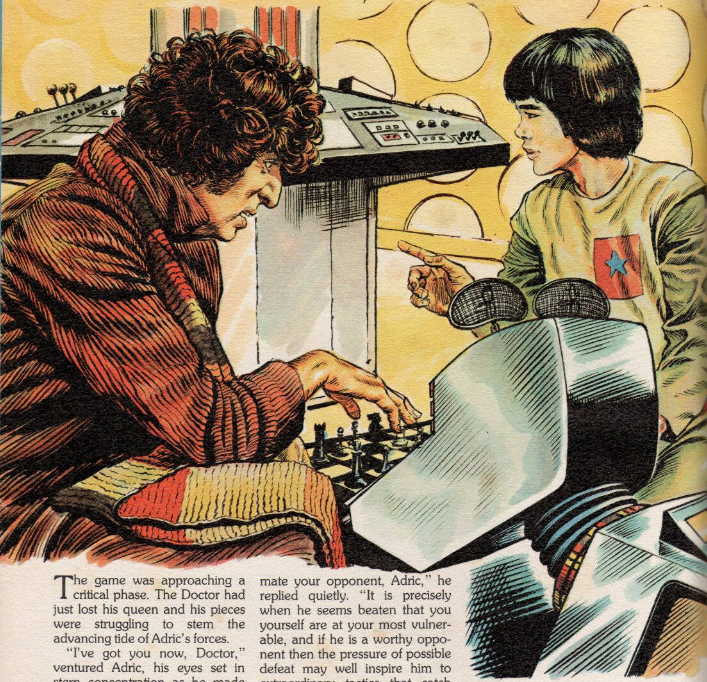
That form is, of course, the shape of one of the now-obsolete Police call-boxes which were once common in many towns. You don't often see them now, so if you do catch sight of one it might well be the Tardis itself!

Though it looks simple enough from the outside, the Doctor's vehicle is in fact packed with incredibly sophisticated electronic equipment, and indeed it is so complicated that on more than one occasion it has defied even the Doctor's attempts to control it.

Just about the most amazing fact about the Tardis is that it is bigger on the inside than on the outside, and the Doctor has been heard to explain this away, rather cryptically, by remarking that it is 'dimensionally transcendental'.

And that really is all we know about the Doctor's time machine. If we find out any more, we'll let you know . . .

CONUNDRUM



The game was approaching a critical phase. The Doctor had just lost his queen and his pieces were struggling to stem the advancing tide of Adric's forces.

"I've got you now, Doctor," ventured Adric, his eyes set in stern concentration as he made his move, watching the Doctor closely for his reactions as he studied the three-dimensional board.

But the Doctor's features remained impassive, reflecting only the infinite patience of one who has lived centuries and learnt the lessons of time. "Never underestimate your opponent, Adric," he replied quietly. "It is precisely when he seems beaten that you yourself are at your most vulnerable, and if he is a worthy opponent then the pressure of possible defeat may well inspire him to extraordinary tactics that catch you unawares."

The Doctor moved his bishop and sat back, his fingertips pressed together in a meditative pose.

Adric smiled. "That's just psychology, Doctor. You're trying to make me worried, bluff me into seeing threats where there are none." The smile suddenly faded from his face to be replaced by a look of perplexity.

"Doctor," he began slowly, "didn't I just move my knight to here?" He pointed a finger at the empty slot. The Doctor leaned forward. "And yet," continued Adric, "it's now back where it started."

"Impossible," said the Doctor, thoughtfully, "but true. I was just lining up my bishop to take . . ." The Doctor hesitated. "My bishop's disappeared. I moved it from here to –"

"Extraordinary tactics?" asked Adric, waiting for the Doctor to explain the rather unorthodox direction the game had taken.

A small light on the central console began flashing, accompanied by a piping, intermittent siren.

"What's that?" asked Adric, turning in its direction.

The Doctor pushed back his chair and rubbed his chin, gazing down at the chessboard. "Sorry, Adric, I'm afraid we'll have to sort this puzzle out later," he said. "That's a space distress call – somebody needs our help."

Adric puckered his lips, pondering the latest development but unable to decide if it was a further ploy on the Doctor's part. He was beginning to understand why the Doctor's enemies found it so hard to defeat him.

The Doctor stood at the console manipulating the controls to get a fix on the exact co-ordinates of the signal. His fingers ran lightly over the array of switches as he rapidly pinpointed its source.

"Lucky we were passing," he mused. "The signal appears to be coming from an uninhabited planet in a one-planet solar system. No other signs of sentient life for light years around. Whoever's in distress could have been signalling for all eternity and not been heard."

Adric joined him by the console. "Then what are these creatures doing there in the first place?"

"Who knows?" replied the Doctor. "Crash landing, perhaps? Let's go down and have a look, shall we?" Making a final adjustment to the co-ordinates the Doctor redirected the course of the Tardis and waited for materialisation to occur.

By the time the Tardis came to rest, the Doctor had already donned his hat and scarf and was briefing K–9. He beamed with satisfaction as he checked off the co-ordinates on the console with those received from the distress signal.

"Dead on target!" he announced.

"Let's hope that the 'dead' isn't too appropriate," added Adric. "Shall I activate the scanner?"

"Yes," agreed the Doctor. "Better see what we're heading into."

Adric flicked the switch and the scanner hummed into life.

"Doctor?" Adric's eyes turned from the screen to the Doctor in astonishment. The Doctor's brain also took a moment to correlate the confusing picture he saw. It was the inside of the Tardis, another room somewhere else in the time machine. The features were too familiar to belong to anything else.

"The Tardis?" questioned the Doctor, unbelievingly.

"Perhaps we've landed inside *another* Tardis," suggested Adric, but his mind had already dismissed the probability of this.

The Doctor looked worried. "No, it's this Tardis all right, but I don't like the implications." He paused and looked at Adric. "This may sound silly, but it looks as if we might have landed . . . inside ourself."

"Is that possible?"

"No, but the visual evidence is hard to refute, wouldn't you say? That's the emergency control room," confirmed the Doctor. "Look, there's my emergency scarf – in case I lose this one."

"Perhaps the image translator's malfunctioning again," Adric said hopefully.

"Somehow I think not," replied the Doctor deliberately. "I took account of all the known variables in this sector of space before I changed course, but even allowing for a wide margin of error we should have landed *somewhere* . . . not . . . not . . . ." The Doctor gave up the line of thought as unfruitful.

"What do you make of it, K–9?" asked Adric.

"A second opinion. Excellent idea," concurred the Doctor.

K–9's antennae whirred busily for a few moments before he made his pronouncement. "Insufficient data to analyse situation."

Adric shrugged with disappointment.

"Precisely," said the Doctor, beaming. "As usual you've hit the nail on the head, K–9. If we can't believe what our instruments say we shall have to go and look for ourselves. It's the only way to collect the data we need. Correct, K–9?"

"Correct, Master."

The Doctor's finger was already pressing the door control. He, Adric and K–9 prepared for the worst and stepped outside . . . into the emergency control room of the Tardis. Adric and the Doctor looked at each other to check they weren't dreaming.

"K–9," asked Adric, "where are we?"

"Tardis emergency control room," intoned K–9's emotionless voice circuit.

"I had a feeling you might say that," mused the Doctor. He stood deep in thought while his mind struggled with concepts that seemed to constantly elude him, as if he were trying to catch his own shadow.

Adric looked round, seeking some clue to this paradox. It defied logic.

"Are we hallucinating, Doctor? Could it be this isn't real?"

"Looks and feels real enough to me," said the Doctor, shaking his head. "I'm afraid it's not as simple as that. More likely it's some strange property of E-space, or at least this particular part of E-space."

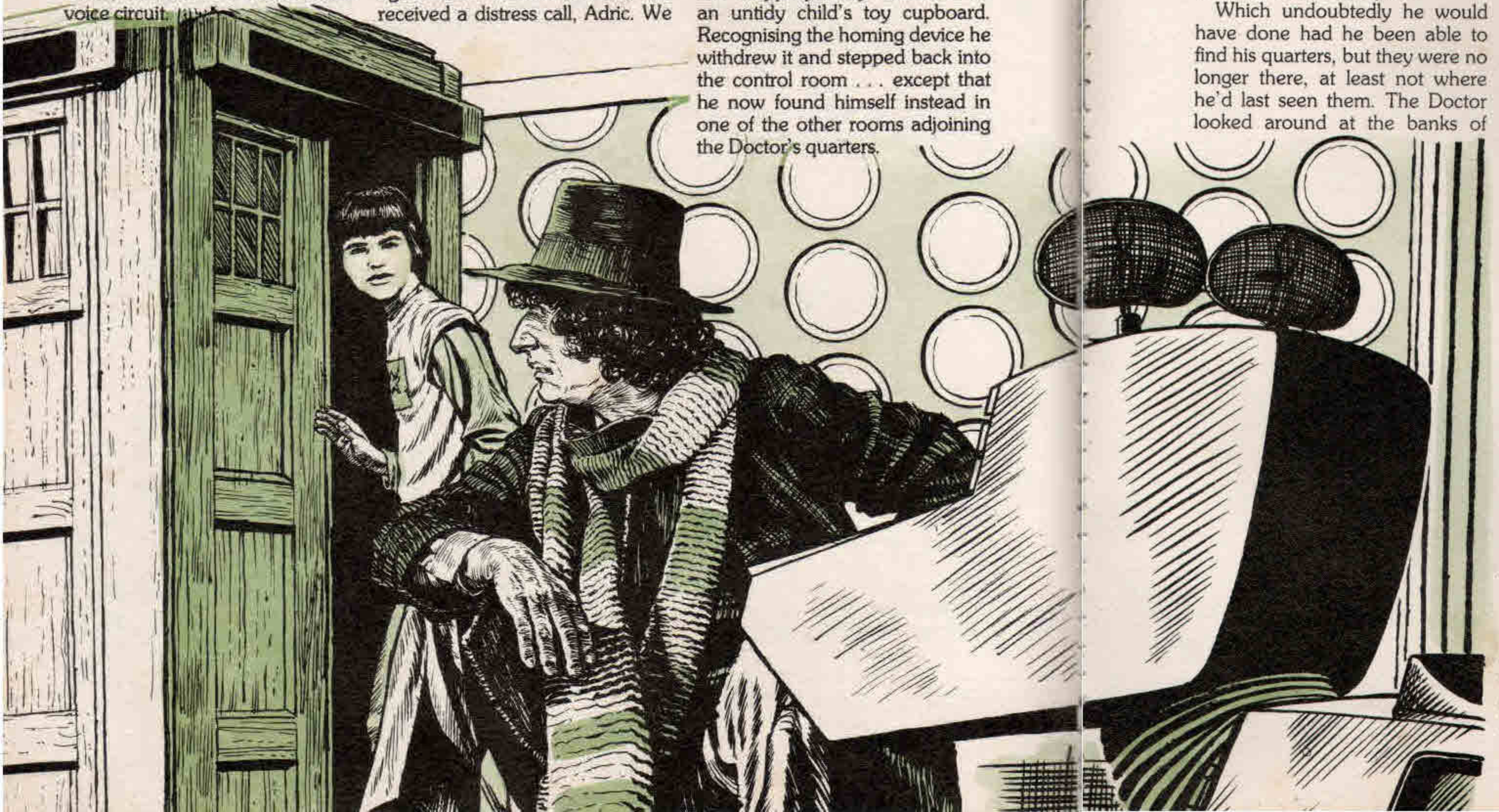
Adric abandoned the mental struggle and turned back towards the control room. "Maybe we should just take off and see if we can break out of it?"

The Doctor sat down on the nearest surface, signalling his disagreement. "We can't do that. We received a distress call, Adric. We can't disobey the space travellers' code and just ignore it."

"But where are they? How could they possibly be *inside* the Tardis? – that signal came from a couple of light years away," fumed Adric.

"But the Tardis is now at the signal's source," explained the Doctor patiently, "so they must be here somewhere. Adric – go to my quarters and have a look in the storage unit to the left of the door; there should be a homing device there. If we key it to the coordinates of the signal we should, logically, find its senders and get to the bottom of this mystery."

Adric complied immediately and vanished from sight through the open doors of the Tardis, and crossed the control room to an opening, off which led the Doctor's quarters. He rummaged through the rather disordered array of gadgets, finding himself not inappropriately reminded of an untidy child's toy cupboard. Recognising the homing device he withdrew it and stepped back into the control room . . . except that he now found himself instead in one of the other rooms adjoining the Doctor's quarters.



Thinking he'd made a simple mistake, he retraced his steps. No, there was no mistake. Where the control room had been it was no longer. Adric shook his head to clear his senses. How could the topography of the Tardis simply alter just like that? He studied the room carefully – nothing seemed different – and decided to try the other door . . . emerging to his bewilderment in the emergency control room.

It was empty. There was no sign of either the Doctor or K–9. Something very basic in the laws of physics was behaving very strangely. Every time he tried to think out the problem, however, his logic seemed to turn back in on itself and collapse.

The Doctor was having not dissimilar thoughts. Tiring of waiting for Adric he gave a sigh and stood up. "If you want a job doing well, K–9 . . . I shall have to find the wretched thing myself."

Which undoubtedly he would have done had he been able to find his quarters, but they were no longer there, at least not where he'd last seen them. The Doctor looked around at the banks of equipment which immediately identified the room as one of the maintenance chambers deep inside the bowels of the Tardis. He turned back to consult K–9 over this latest puzzle only to discover that the emergency control room now appeared to be Adric's quarters.

"Well, that probably makes three of us thoroughly lost I should think." He tensed suddenly, sensing somebody's presence nearby. Turning slowly he ventured a look round the corner down the long corridor that led off Adric's room in time to see the back of a figure in the distance. He instantly recognised a familiar object trailing down the back's figure.

"He's got my scarf!" cried the Doctor, and set off in pursuit, shouting, "Stop thief!" but the figure, apparently startled, scuttled round a corner with the Doctor hard on his heels.

Adric, feeling a trifle uncertain of his sanity, had sat down to ponder his dilemma. The problem, he debated, was this: apart from his first re-entry into the central control room to fetch the homing device, every time he left one room behind, the topography of the Tardis seemed to alter. Nothing remained permanently as it was, no route maintained any consistency. It would be impossible to draw a map of such a place since its features seemed to be in a constant state of flux. Either some malfunctioning unit in the Tardis or an outside force must therefore be affecting the relative dimensions in space within the Tardis, causing them to become unstable. So far so good, but how to trace and correct the source of the malfunction or the disturbance eluded him, but it was some small comfort to know there was an explanation if not an immediate solution.

He toyed with the homing device in his hand. His subconscious mind was already one jump ahead. Fortunately, having a good head for figures, one momentary look at the coordinates the Doctor had set to lock in on the distress signal had been sufficient for them to stick in his memory. Excitedly, he activated the device and typed out the combination of symbols on the compact keyboard. A steady, pulsing note sounded from its inner workings and Adric swung around in a slow 360 degree turn to determine the direction of the signal's source.

"At least if I can join forces with whoever it is who's sending the distress call," he reasoned, "we may be able to combine data and think out a solution." Nagging at the back of his mind still was the question of how they came to be in the Tardis in the first place; but the satisfaction of finding some positive course of action banished the problem temporarily from his thoughts. He strode boldly in the direction the device indicated, ignoring the fact that it led back through the door he had last come through which proved to open out into a totally different room from the one he expected. Smiling to himself, he realised that he would have been even more surprised if the room he'd actually expected *had* been there – now that *would* have been difficult to explain.

The Doctor was out of breath. The intruder who had cheekily made off with his scarf seemed not only an equally good athlete, but also appeared to take a sadistic delight in taunting the Doctor. The moment the Doctor stopped, the intruder stopped as well – at least whenever the Doctor glimpsed a sight of him. It was infuriating, and yet the intruder never seemed to take the opportunity to hide and lose his pursuer.

Through room after room, up and down ladders, along endless reaches of corridors, no matter where the Doctor followed, half of the time by instinct as much as by sight of his fleeing quarry, the intruder was always there.

The Doctor admitted defeat.

"All right, keep the scarf!" he bellowed after the thief. "See if I care!" The intruder appeared to take no notice, keeping his back steadfastly pointed at the Doctor.

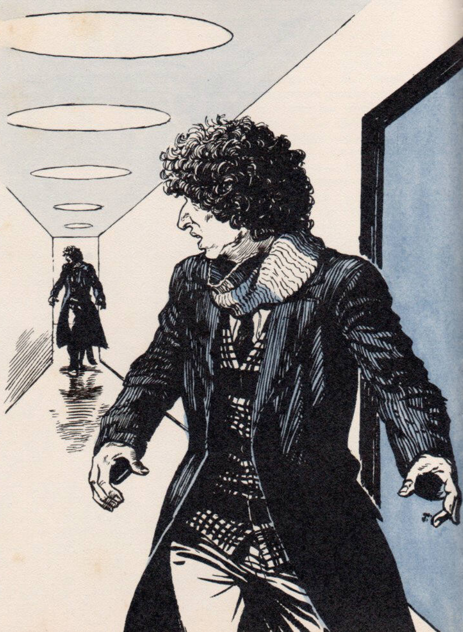
The Doctor turned and walked away. Throwing a glance back over his shoulder to hurl a final insult the Doctor froze in his tracks. It was not the fact that the intruder had turned to follow *him* that amazed him, it was the indisputable evidence of his own eyes that the intruder was dressed identically, and that he too was glancing back over his shoulder.

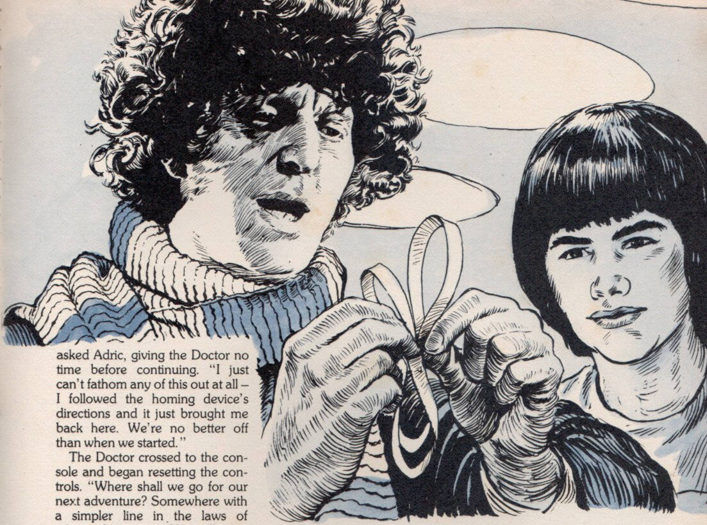
The Doctor swivelled his body round slowly, keeping his eyes fixed firmly on his double, observing that the double was duplicating his actions exactly. "It's *me*," he said slowly, the truth dawning, scratching his head ruefully while amusedly watching his counterpart do the same.

It was some hours later when the Doctor found his way back to the central control room. Adric and K–9 were already there, Adric glowering at the homing device in a frustrated attempt to penetrate the mystery it presented.

"Ah, hello, Adric, K–9," grinned the Doctor. "Glad to see you found your way home."

"Doctor, where did you get to?"





asked Adric, giving the Doctor no time before continuing. "I just can't fathom any of this out at all – I followed the homing device's directions and it just brought me back here. We're no better off than when we started."

The Doctor crossed to the console and began resetting the controls. "Where shall we go for our next adventure? Somewhere with a simpler line in the laws of relative dimensions, I hope."

Adric looked up. "But the distress signal – we haven't rescued whoever it is needs –"

"Oh, I shouldn't worry about that," interrupted the Doctor mildly. "They're quite safe now."

Adric slammed down the homing device in anguish. The Doctor walked across the control room and sat beside him.

"Do you have a piece of paper on you?"

Adric felt in his pockets and retrieved a folded sheet of paper, which he handed to the Doctor who proceeded to tear it into strips. He turned to Adric and gave him a piece.

"Fold it so it becomes the section of a cylinder," he commanded. Adric did so. "How many sides has it got, ignoring the thickness of the paper?"

"Why, two, of course," replied Adric. "An inside and an outside."

The Doctor unfolded the cylindrical strip, and put a twist in the paper, rejoining the two ends. He took a pin from his lapel and fastened it together. "Now how many sides does it have?"

"The same, of course," replied Adric.

The Doctor handed him the twisted strip and a pen. "Show me. Start at the pin and trace a line round the strip until it joins up."

Adric did so, and to his amazement found himself drawing a line which ran unbroken, covering every visible surface of the paper, and joined itself back at the point he'd started.

"How many sides?" grinned the Doctor.

"One," gasped the astonished Adric.

"That's right," said the Doctor. "It has an inside, but no outside. It's called a Möbius Strip."

The light dawned in Adric's eyes. "You mean to say that's what has happened to us? But it's not physically possible." He glanced down at the strange twist of paper in his hands.

"Well, it's not quite as straightforward as that," said the Doctor, and proceeded to nimbly twine four other Möbius Strips through each other, interlocking them at one point. The result was a strange tangle of loops.

"We seem to have drifted into some unique area of space where the contorted logic of the Möbius Strip has run wild," he explained. "If you imagine the control room is here at the point where all the strips meet, it follows that whichever direction you take you will end up back here without ever going outside, and each of these strips represents a different contortion of the topography of the Tardis. Since they all link at the one point there was no guaranteeing when we left the room that we'd all step into the same strip."

Adric sat back, stunned by the

concept. "How in space did you work it out?"

"'When you have excluded the possible, whatever remains, however impossible, must be the truth' – an old Earth saying," replied the doctor. "I only had to look at myself to discover the truth."

Adric looked questioningly at the Doctor.

"I spent half the day chasing myself," responded the Doctor. "There must have been dozens of all of us wandering round the Tardis, each following our own route. It was only the infinite number of strips, the countless number of variations, that prevented us all meeting ourselves several times. It must have been pure chance I happened upon myself."

Adric looked even more mystified.

"How could you be in more than one place at a time?"

"I wasn't," laughed the doctor, picking up the single Möbius Strip. "I was in the same place, all of me; it seems to be a singular property of *Möbian* space that it is both one Möbius Strip and an infinite number of Möbius Strips at one and the same time. By coincidence I just happened to follow one that was almost exactly parallel to another, so I ended up practically following myself." Adric sighed with the mental effort.

"Oh, I found my bishop by the way," the doctor went on, producing the chess piece from his pocket. "It was in a corridor on Level 8. It seems our three dimensional chess board has been temporarily converted into a tesseract, you know, a four dimensional cube."

"A four dimensional cube?" gasped Adric. "Spare me the explanation, please, Doctor," he pleaded, moving over to the console. "Let's just get out of this place."

"Quite right," agreed the Doctor. "That's enough fun for one day, there's work to be done. We'd better turn off our distress signal before we go any further."

"Ours?" asked Adric, wondering how many more surprises his mind could take in one day.

"Another feature of *Möbian* space it seems," said the Doctor, busying himself with the controls. "When the Tardis first entered *Möbian* space we met our own signal and tried to rescue ourselves. Am I right, K–9?"

"Affirmative, Master," agreed K–9. "I sent a distress signal from the central console when you and Adric disappeared."

"Give me a bug-eyed monster any day," sighed Adric. "Or a nice chunk of advanced calculus to do in my head. I feel like I've been turned inside out."

"Ah, now that *is* an experience I'd advise you to avoid. I remember one occasion," said the Doctor, drawing in breath to explain as the Tardis dematerialised and headed off into the unknown realms of space and time.

THIS'N'THAT

A look at some of the latest developments in science and technology.

Street Map, Please

Computer technology is advancing at such a headlong pace that scientists can envisage a time when everyone in the world will have his or her own private computer, which could be used to gain access to the knowledge of the entire human race.

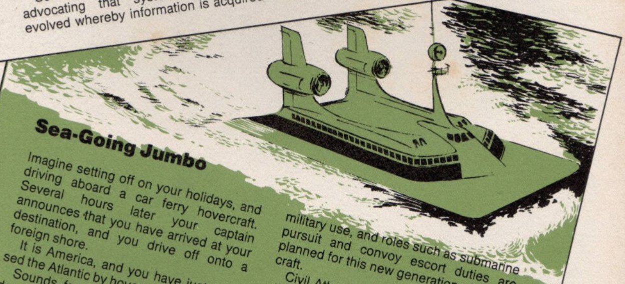
The world's greatest libraries would be accessible at a moment's notice, and you could quite simply dial up the information you needed on your viewing screen. There would be limitless possibilities to this system, and the total amount of knowledge stored would be truly colossal.

Some scientists, however, are now advocating that systems should be evolved whereby information is acquired only when it is needed, rather than having every item stored.

Let's take an example . . . Imagine you are alone in Birmingham some hundred years from now, and you are looking for a particular street. You would probably not be able to buy a street map in a bookshop. The map, the shop itself, and the money, might all be obsolete by then. You just might find one tucked away in your computer's memory banks somewhere, but failing that there might be another alternative.

All you'd have to do would be to programme your computer to command a satellite to take an aerial view of the city, then process it into the simple street map you need. Hard to believe, but it might well be as simple as that.

Alternatively, of course, you could always ask a policeman . . .



Sea-Going Jumbo

Imagine setting off on your holidays, and driving aboard a car ferry hovercraft. Several hours later your captain announces that you have arrived at your destination, and you drive off onto a foreign shore.

It is America, and you have just crossed the Atlantic by hovercraft.

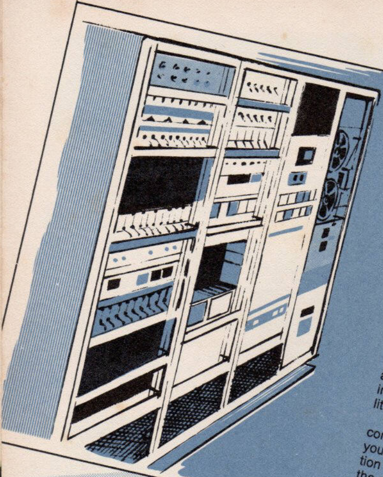
Sounds far-fetched? Well, it certainly doesn't sound that way to hovercraft designers and engineers, and this is a new project which many of them are busily working on now, along with many other possible new developments for this useful and versatile vehicle.

Some of the new developments are for military use, and roles such as submarine pursuit and convoy escort duties are planned for this new generation of hovercraft.

Civil Atlantic travel would be a spin-off development, and such a vessel would have to weigh in the region of 5,000 tons, but it *is* a possibility, which could possibly come to fruition in the 1990s.

For a family of four and their car the ocean-crossing by hovercraft could be cheaper than flying, and the journey would take about 19 hours.

Not quite up to the Tardis standards, of course, but it would certainly be an exciting journey!



Chatterbox!

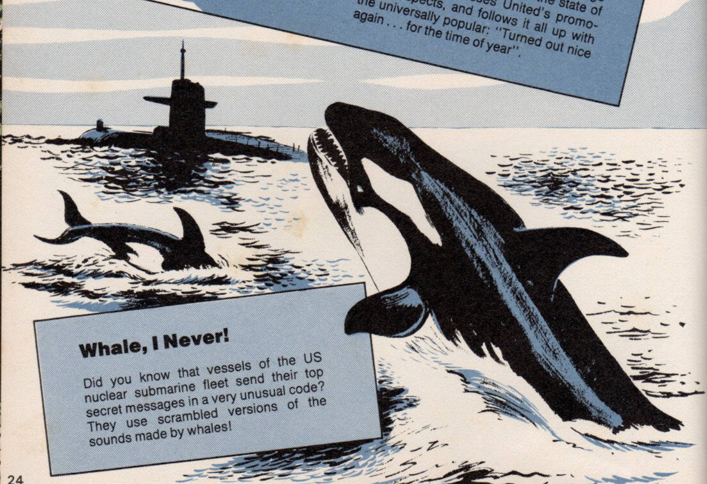
If you're always surprised at the chatty manner in which the humans speak to the computers in science fiction films, you may be in for another surprise . . .

For that really *is* the direction in which computer scientists are heading. They are programming their metal whizz kids to *talk* to their operators, in pleasant, conversational exchanges.

But why, you might ask.

Apparently, experts studying human behaviour in the working environment have discovered that people are more efficient if they can have a little natter about their work now and then. It would undoubtedly be very boring to sit alone at a computer console all day without uttering a word to your 'workmate', so that little problem will be ironed out.

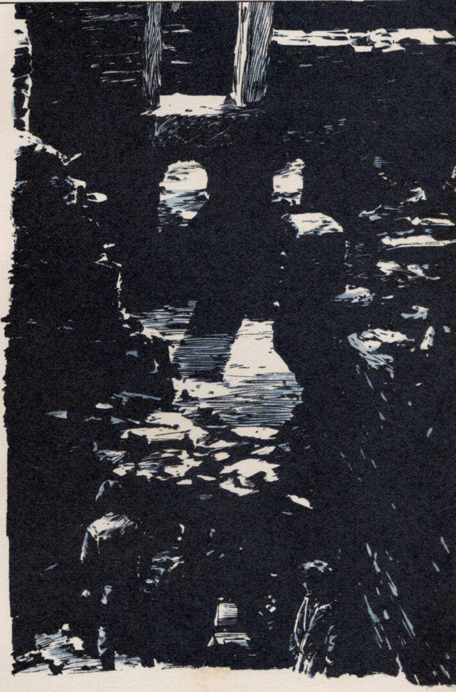
It won't be too long before the average computer asks politely about the state of your health, discusses United's promotion prospects, and follows it all up with the universally popular: "Turned out nice again . . . for the time of year".



Whale, I Never!

Did you know that vessels of the US nuclear submarine fleet send their top secret messages in a very unusual code? They use scrambled versions of the sounds made by whales!

PLANET OF PARADISE



The Tardis landed with a soft bump.

It was a relief to them all to be on solid ground once more, but to K–9 it was a particularly welcome sensation. He had information stored in his memory banks which told him that there are many dogs on the planet Earth which dislike riding in the motor cars of their humanoid masters, and he felt great sympathy with those unfortunate creatures.

As for the others, they were engrossed in studying the viewing screen, which gave them a good all-round view of the new land.

"Strange," murmured the Doctor. "This is definitely the planet Elystria, all the readings confirm that. But it is different, so very different from the last time I was here."

"When was that, Doctor?" asked Adric.

"Hmm? Oh, about three hundred and fifty years ago, I think. Elystrian time, that is."

"Surely you can expect a few changes in over three hundred years?" asked Adric, puzzled.

But the Doctor looked worried. "Not changes like these, Adric," he replied. "You see, Elystria used to be known as the Planet of Paradise. Everything on it was perfect. A perfect society. There was no reason at all for anything to change. Unless . . . unless something has gone dreadfully wrong."

Adric surveyed the devastation which the viewing screen all too clearly revealed. There had been a fine city here once, that was obvious. But much of it now lay in ruins, and the few remaining buildings which were still standing showed no signs of life.

"What kind of life form existed here, Doctor?" he asked.

"Humanoid," replied the Doctor. "The people were remarkably similar to those of the planet Earth, and I struck up some good friendships with one or two of them. They were known as one of the most peaceful races in the entire universe. Although in that they were *unlike* the people of Earth," he finished, wryly.

"Well, we're not going to find out what's happened just by standing here chatting about it," said Adric. "We'll have to go outside to get to the bottom of this mystery."

"You're right," said the Doctor, pressing the button which opened the Tardis's door. "Is everything ready? Come on, K–9."

With a whirr and a squeak the faithful metallic hound was at his master's feet, and the Time Lord and the boy stepped out onto the surface of Elystria.

They cautiously approached the ruins of what had been the capital city, and their caution was well-founded, because it wasn't too long before K–9's sensors began to pick up strong danger signals.

"Humanoid approaching, Master," warned K–9. "Indications of high energy expenditure, indicative of fear and pursuit. Pursuer is . . ."

K–9 didn't have time to finish his sentence, and as it turned out he didn't really need to, for at that moment the humanoid and his pursuer came sharply into view, turning onto the path ahead. The poor man was running as fast as his legs would carry him, and casting occasional terrified glances over his shoulder at the evil-looking robot which was hot on his heels.

"K–9, can you handle this?" asked the Doctor, and K–9 immediately responded, lurching forward at his top speed, and enthusiastically blasting at the heels of the robot. K–9 had surprise on his side, and within seconds the robot had turned tail and was fleeing the scene, while the astonished but grateful man flopped onto the path, panting heavily and trying to steady his frayed nerves.

"Thank you . . . thank you . . . whoever you are . . ."

At last the man managed to speak, and he stared up at his rescuers. Whoever these strange visitors were, they had saved his life, that was for sure.

But if he was expecting an explanation he was not to receive it. Not yet, at least. For it was the Doctor who wanted explanations now, and fast, before the robot returned, with the inevitable reinforcements which it would bring.

"What's happening here, man?" asked the Doctor urgently. "What's happened to your perfect and peaceful society? Who controls these robots?"

"Our society exists no more," sighed the man, sadly. "Oh, there are still a handful of us alive, scattered about the city, managing to hold out by barricading ourselves into abandoned buildings, but we can't last much longer. Those of us who try to carry on hold weekly meetings in a cellar not far from here, and that's where I was going when the robot spotted me. Would you like to come with me? We could be there in three minutes, and it would be safer to talk."

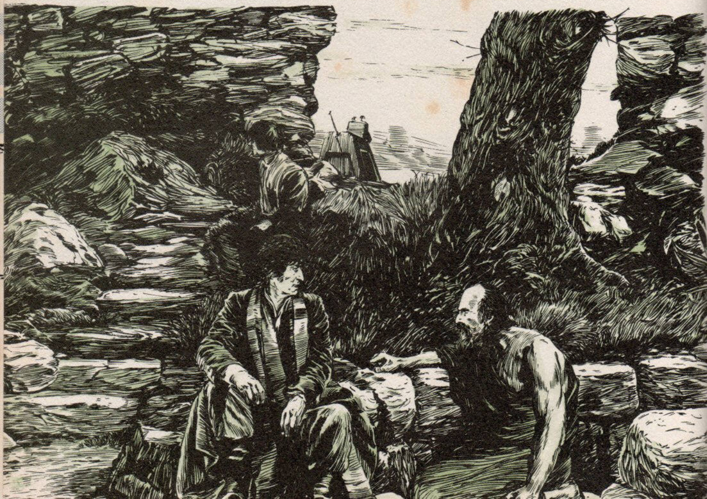
"Lead on," said the Doctor immediately. "We are right behind you."

As they approached the cellar meeting place they heard the sounds of urgent scufflings, for the look-out had seen the strange party and had given the word to hide.

"Don't be afraid!" called out the man, and he gave the secret password. "I bring friends, and they have saved my life."

The door to the cellar opened a crack, and a face peered out. "Come in then, and quickly," hissed the look-out. "There are many patrols out tonight."

Within the safety of the cellar the Doctor and his companions could see that some twenty tired



and bedraggled men were assembled, and they were all viewing the newcomers with great suspicion.

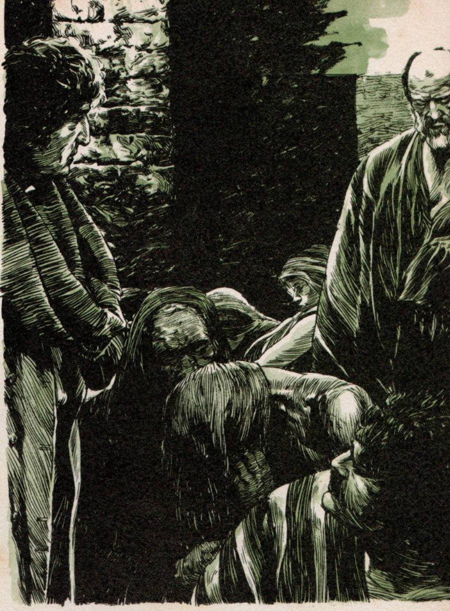
"Don't be afraid, my friends," repeated the man. Then he turned to his rescuers: "My name is Sklar, and these are my fellow survivors of the great catastrophe which has befallen our planet. There is no way in which I can thank you for saving my life. We have no money, and few possessions. But everything we have is yours."

"Thank you, Sklar," smiled the Doctor. "But there is nothing we need. Now tell me," he continued more urgently, "what has happened here? Who controls these robots? What of your leader, Vayla? Surely he can help you?"

An angry murmur passed round the assembled men in the cellar at the mention of Vayla's name, and a wry smile came to Sklar's lips.

"Vayla?" he said. "But it is Vayla who is responsible for this destruction. Vayla wishes to see us all perish."

The Doctor was stunned. The last time he had visited Elystria, Vayla had been venerated by all his people. The Doctor knew that the Elystrian lifespan was five hundred years, and that until Vayla died the laws of the planet would prevent anyone taking over from him as leader. But what could have caused this change in him?



Sklar continued with his explanation. "Those of us who survive have managed to keep intact the great books and manuscripts which laid down all the laws and precepts by which our great society existed and flourished. Should we ever manage to wrest control from the evil robots, and destroy them utterly, we would be able to rebuild the society which we all loved so much. But we cannot get past the robot guards to penetrate their stronghold."

The Doctor was thinking hard. "Maybe we can help you," he said at last.

Every face in that damp, dark cellar turned towards him. Could this stranger and his friends possibly help? Who were they? Where had they come from? They had saved Sklar's life. Could they do more?

Adric and K–9 were wondering much the same things. What did the Doctor have in mind? From the intent expression on his face there was a plan forming in his head; that was obvious.

"We will penetrate the stronghold for you," said the Doctor, with such an air of confidence that the men assembled in the cellar couldn't help letting their hopes rise. "We will discover what evil exists there, and we will destroy it."

"As simple as that," murmured Adric, somewhat sarcastically.

But all eyes and ears were on the Doctor, and no one heard him.

"Sklar, will you come with us?" asked the Doctor, and the brave man readily agreed. "You will have to show us the location of the stronghold, and point out to us all the guard posts which you know of. K–9 will sniff out the rest, eh, K–9?"

"Affirmative, Master," replied K–9 in his clipped metallic voice, and twenty heads turned to study the stranger's bizarre companion.

But there was no time to lose. Search parties would have been sent out once the robot returned with its tale of the four strangers on the planet, and the men would have to disperse and make their way back to the comparative safety of their barricaded hideaways.

As for Sklar, the Doctor, and his companions, they had work to do, and Sklar was eager to help.

"Follow me," he said urgently. "I know a way in which we can approach almost to the entrance of the stronghold without being seen."

"Good man," said the Doctor. "Lead the way." And the four of them left the dark cellar and emerged once more into the light of day.

"Keep out of sight as much as possible," said the Doctor to his companions. "There are plenty of bushes and trees to give cover. Run from one to the other when you're sure the way ahead is clear."

In this rather slow fashion, with Sklar out in front, they made their way to the ominously dark and gloomy building which was the stronghold of the evil band of robots who seemed now to be in complete control of Elystria. All was quiet, and the Doctor felt sure that they hadn't been seen. Now they would have to gain entrance to the building, and even the Doctor had to admit that this might be the tricky bit.

"I will wait here for you and act as look-out," said Sklar. "If there is any robot activity out here I will give the cry of the Elystrian owl, like this . . ." and Sklar gave an ear-piercing shriek, which the Doctor immediately recognised as the call of a bird which had kept him awake well into the night on his last visit to Elystria. "Good luck!" called Sklar, as the Doctor and his companions disappeared into the robot building.

The three of them made their way gingerly along a seemingly endless corridor, off which there were many rooms, most of them laboratories. In these rooms they could see robot scientists working on their constructions – which were more robots.

"Robots building robots!" gasped Adric, who had never seen such a strange thing in his life. But to the Doctor, who was vastly more experienced in these matters, the sight was not so remarkable, and he was beginning to understand what must have happened on the planet.

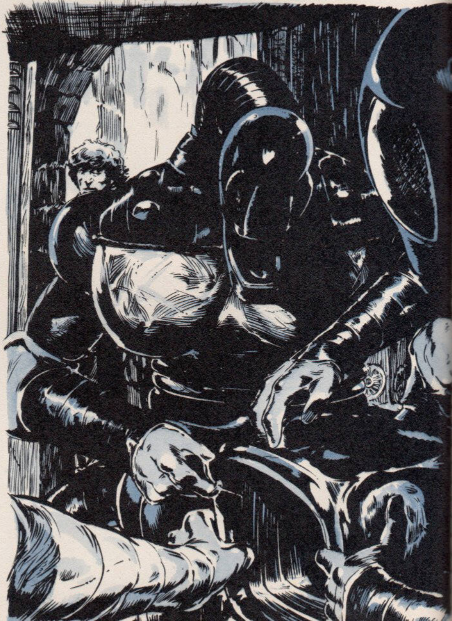
"When I was last here," he told Adric, "Vayla told me that he was going to build robots which would be able to do the most menial tasks on the planet, thus making the lives of his people even more enjoyable. I think that he must have made them just a little bit too intelligent, and they have taken over their master."

"How, Doctor?" asked Adric.

"Implanted false brain waves probably," continued the Doctor. "I have seen this happen before. Creator taken over by created. Totally ruled by something which he himself has made. Vayla was a good man. He would never have allowed these evil robots to rule his homeland."

Minutes later the Doctor was able to discover just how right he was, for they had now reached the central control laboratory, and they discovered that at the master control panel was not Vayla, but the largest of all the robots they had yet seen. They could just see Vayla, imprisoned in a metal cubicle at the back of the lab, with a glazed expression in his unseeing eyes.

"They are going a step further," gasped the Doctor. "Total reprogramming. Vayla will be destroyed if we don't save him. A surprise attack worked before. Let's try it again. Make as much



noise as you possibly can. This place is almost silent. Perhaps we can distract them that way."

Shrieking and yelling, they hurtled into the control lab and, as the Doctor had predicted, the single robot was taken completely by surprise and seemed so startled as to be thoroughly thrown for a minute. But it wasn't long before it regained control, and pressed a button to alert the security forces.

The next few minutes went by in a flash. K–9 and Adric made most of the noise, and Adric borrowed the Doctor's scarf and danced around the room, whirling it over his head. Complete confusion reigned.

"I've got Vayla!" yelled the Doctor at last, supporting the limp figure on his arm. "Let's get out of here!"

Without a moment's hesitation they all turned and headed for the corridor once more. There wasn't a second to lose, for by now security robots were appearing from every direction, and by the time they got to the door, outside which the terrified Sklar was waiting, there were at least ten or twenty of the robots hot on their tail, striding along with huge powerful steps.

Even the Doctor began to be a little worried as to whether or not they could all escape, particularly as they would be slowed down by the weak Vayla.

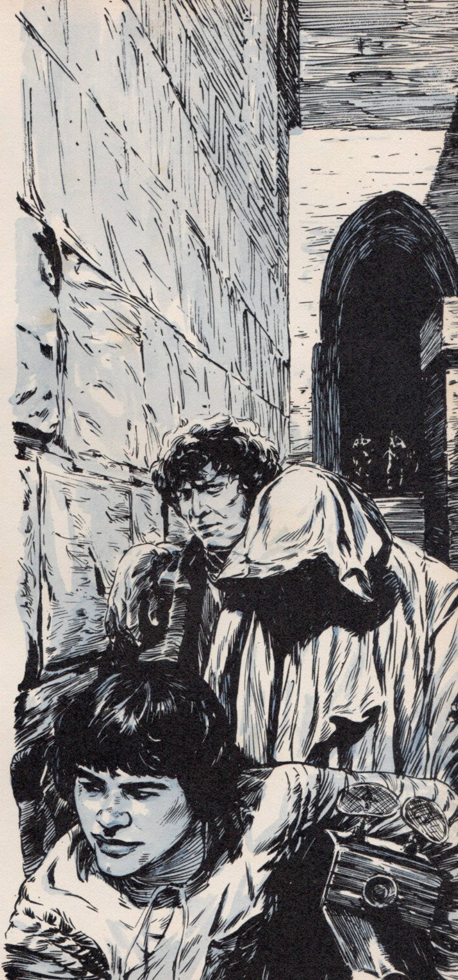
But then a strange thing happened.

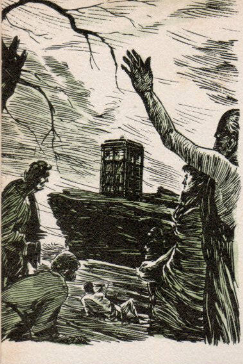
Suddenly all the robots seemed to go awry. Their movements were completely unco-ordinated, and they stumbled about in a mass of metallic arms and legs as though they were all drunk.

There wasn't time to wonder why. This was their chance to get away, and they seized it, fleeing the strange scene of the tangle of robots and making for the security of the cellar.

Minutes later they all flung themselves through the door, and lay in a heap almost as untidy as that of the robots, trying to get their breath back.

The Doctor, as usual, was the





first to recover. "May I have my scarf back, please, Adric?" he enquired, and such a simple request in the middle of so much excitement was enough to break the tension. They all laughed joyfully as Adric handed it back, and quickly the Doctor explained to Sklar how Vayla had been used by the robots.

"I understand," said Sklar. "We will look after him now. He will be our leader once more when he recovers and things will return to normal on our planet."

"Good," said the Doctor, with a smile. "But there's still one thing I don't understand. Whatever happened to those robots . . .?"

"Could it be anything to do with this?" asked Adric innocently, and he held out a small metallic control panel, labelled 'Co-ordination'.

"The co-ordination control! You stole it!" cried the Doctor.

"Yes, in all the confusion back there in the lab," replied Adric, with a smile. "I thought it might be useful."

"Useful!" cried the Doctor. "Adric, you probably saved our lives!"

And strangely enough, just for that moment, the doctor forgot all his well-meaning plans to teach Adric to adopt the kind of high moral standards in which stealing should quite definitely *not* be included.

Well, maybe this was the exception to prove the rule . . .!

THE BIG BANG THEORY

The Big Bang Theory is now generally accepted by astronomers as being the most likely explanation of the origins of our Universe. But just what is the Big Bang they talk about?

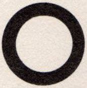
Well, scientists believe that some 13 billion years ago all the matter of the Universe as we know it now was gathered together in one place. Then came the Big Bang, which was a truly gigantic explosion. Everything in that giant collection of matter was flung outwards by the blast, creating the Universe in which we now live.

You find that pretty mind boggling? Well wait, there's more to come . . .

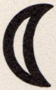
It has long been observed that the Universe is *continuing* to expand, rather in the way a balloon expands when you blow it up. Stars are still being formed from huge clouds of gas, and we have by no means mapped the Universe yet. Its unimaginable vastness holds many mysteries still.

And there's another mystery. What was happening *before* the Big Bang? Where did that incalculable mass of matter come from? There are many theories, too complex to discuss here. Only one thing is certain: *no one* really knows!

SPACE SHORTHAND



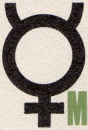
Sun



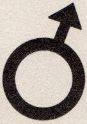
Moon

Scientists and astronomers often use a kind of shorthand, made up of symbols, when they are writing about the solar system. Some of the symbols are ages old, and were devised by the very first astronomers, as they studied the mysteries of the skies.

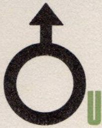
The symbols for the Sun and the Moon were probably based on old symbols for gold and silver. Mercury, the messenger god, is represented by a winged helmet, and the gods Venus and Mars have the traditional female and male symbols. The cross inside a circle which represents Earth is probably of medieval origin, and Jupiter is shown as a lightning bolt. Saturn, which was once called Kronos, has a stylized K as its symbol. There doesn't appear to be any particular meaning to the symbol for Uranus, which was chosen when the planet was discovered, but the symbol for Neptune clearly shows the sea god's trident. When Pluto was discovered in 1930 a symbol was devised which uses the first two letters of its name.



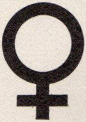
Mercury



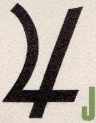
Mars



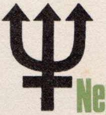
Uranus



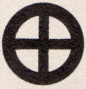
Venus



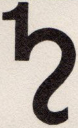
Jupiter



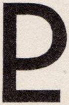
Neptune



Earth



Saturn



Pluto

STAR GAZING
at The London Planetarium

Whether you're a keen and knowledgeable astronomer, or simply one of those many people who enjoy gazing into a star-strewn sky at night, The Planetarium should be high on your list of priorities next time you visit London.

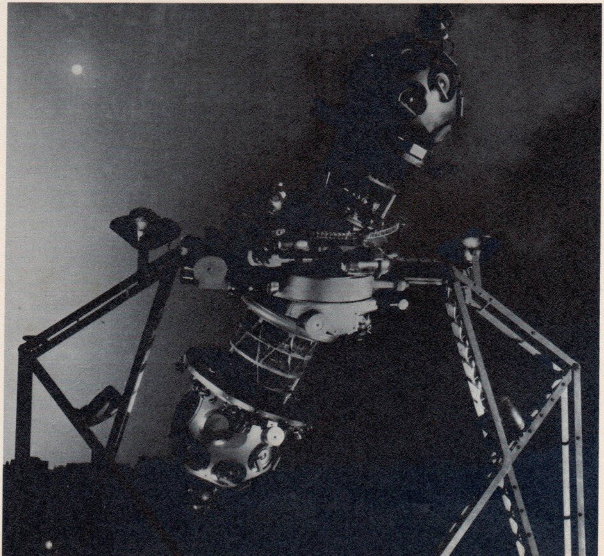
You'll sit under a huge hemispherical dome in the darkened auditorium, and watch in amazement as a realistic and accurate reproduction of the night sky is projected over the heads of the audience. The Sun, the Moon and the planets follow their correct courses across the heavens, and the whole presentation is so skilfully achieved that you might easily think you were sitting out of doors on a clear night, watching the real thing.

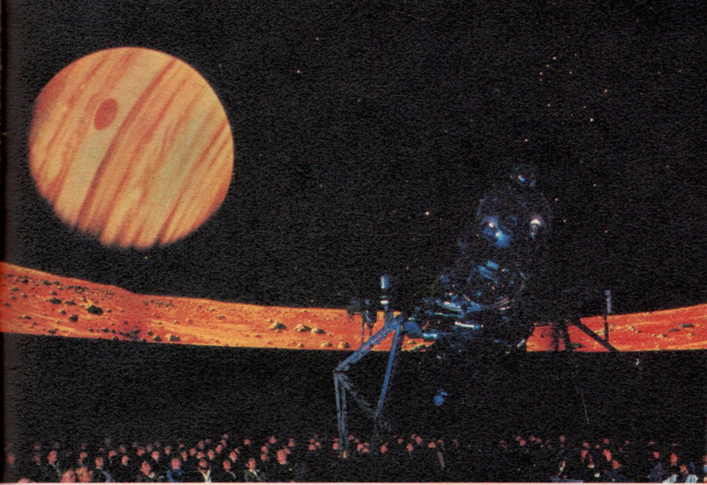
The sophisticated instrument which makes all this possible is the two ton Zeiss Planetarium projector, a masterpiece of optics, electronics, and precision engineering, which amply justifies its £70,000 price tag.

THE ZEISS PROJECTOR

In the last century, mechanical devices called orreries were used to demonstrate the orbits of the planets round the sun, but it soon became obvious that these were far too limited in both scope and accuracy. The Deutsches Museum in Munich began to investigate the possibility of making models on some other principle, and the optical firm of Carl Zeiss in Jena was invited to participate.

The two ton Zeiss star projector inside the London Planetarium.



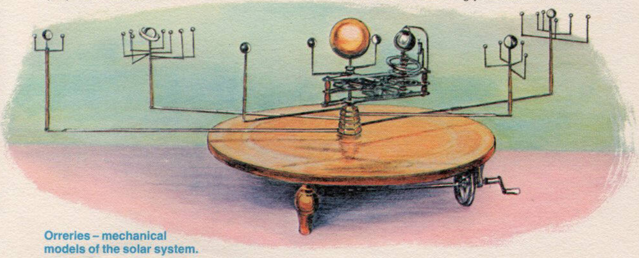


A fascinated audience watch Jupiter, the stars, and the surface of Mars.

In 1918 the firm's chief engineer Dr Bauersfeld came up with the idea of placing numerous small optical projectors at the centre of a large fixed hemisphere. These would be turned at such speeds that the images of the heavenly bodies would be thrown on the inner surface of a dome so that they traced out their correct paths: and the principle of the modern day Zeiss projector was born.

There was still a great deal of work to be done, however, and it was to be several years before Dr Bauersfeld's dream emerged as a reality. The astronomical and technical calculations stretched into reams of paper, and a large staff of engineers, optics experts, workshop technicians and laboratory assistants were kept fully occupied for some five years of intensive work.

Happily, the resulting instrument was a success beyond even the dreams of those who had built it. The realistic portrayal of the heavens was stunningly accurate and excit-



Orreries – mechanical models of the solar system.

ing to watch, and the public response was enormous, with over 80,000 people going to see the fantastic new spectacle within its first 18 months of operation at Jena.

That first projector showed the view of the heavens only from the northern hemisphere however, and the scientists soon realised that their invention would be greatly improved if it could be modified to show the view from anywhere on Earth. Dr Villiger, a colleague of Dr Bauersfeld, was largely responsible for the modifications which made this possible, in 1926. (Nowadays, of course, the current Planetarium projector can even show the stars as they would be viewed from a vantage point in space. For instance, we can look out at the stars as if from the surface of the Moon, and see in simulation exactly what Neil Armstrong saw in magnificent reality.)

The Zeiss Projector currently in use in the Planetarium is the 23rd to leave a German factory, and the first to be used in the British Commonwealth.

It is a magnificent instrument, with a dumb-bell shaped central assembly, supported by steel latticework. It contains about 29,000 individual parts, 230 ball bearings, and nearly 200 optical projectors. It weighs more than two tons, and it is a triumph of design, with not a centimetre of wasted space.

Projectors for the Sun, the Moon, and five naked-eye planets are placed in the open lattice cylinder joining the two big globes of the dumb-bell. And those two big globes between them project approximately 8,900 stars, all of which are correctly graded for brightness, and spaced apart on a perfect scale of their actual positions in the sky.

As you can see in the colour photograph, the projector dominates the proceedings at a Planetarium presentation, and visitors are intrigued by it as they enter the auditorium. As soon as the presentation begins, however, it's all eyes upwards for the show! No one wants to miss a moment of this fantastic and fascinating experience.

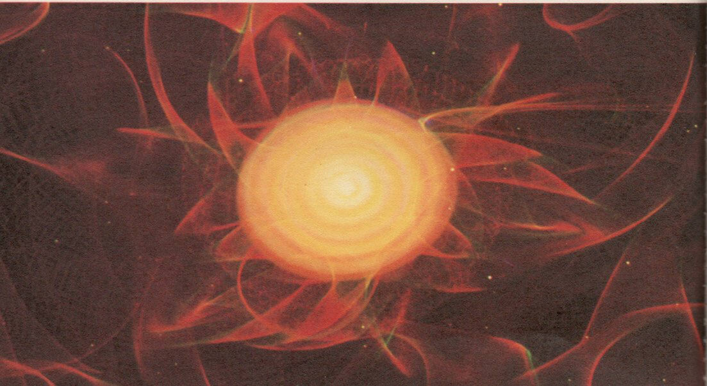
LASERIUM

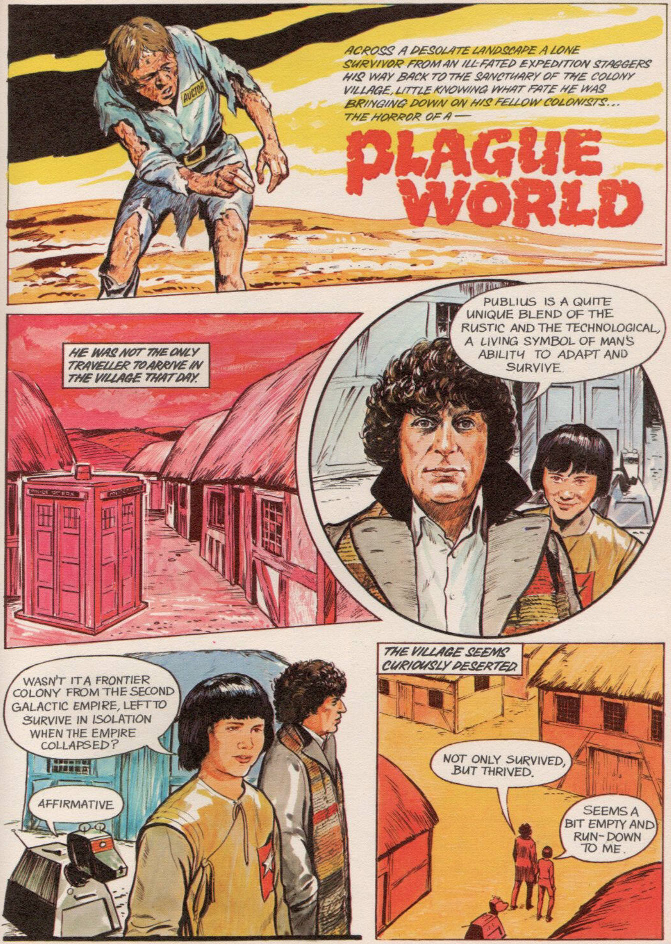
As if the projections of the universe were not enough, since 1973 the Planetarium has offered another stunning spectacle to thrill its many thousands of visitors: Laserium.

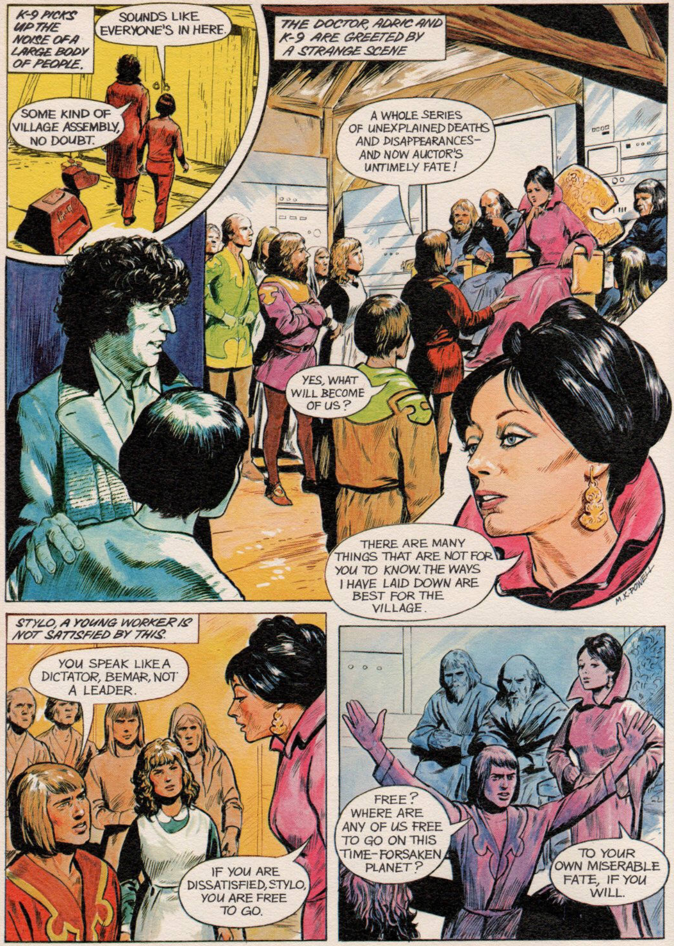
Laserium is a laser light show which uses a one-watt Krypton gas laser to produce beautiful images. The Planetarium dome comes alive with brilliant colours and abstract patterns, and the show is set to music to complete the marvellous effect. It is described in the Laserium brochure as 'a three-dimensional fusion of colour, form and sound', and that's probably the best description you could find.

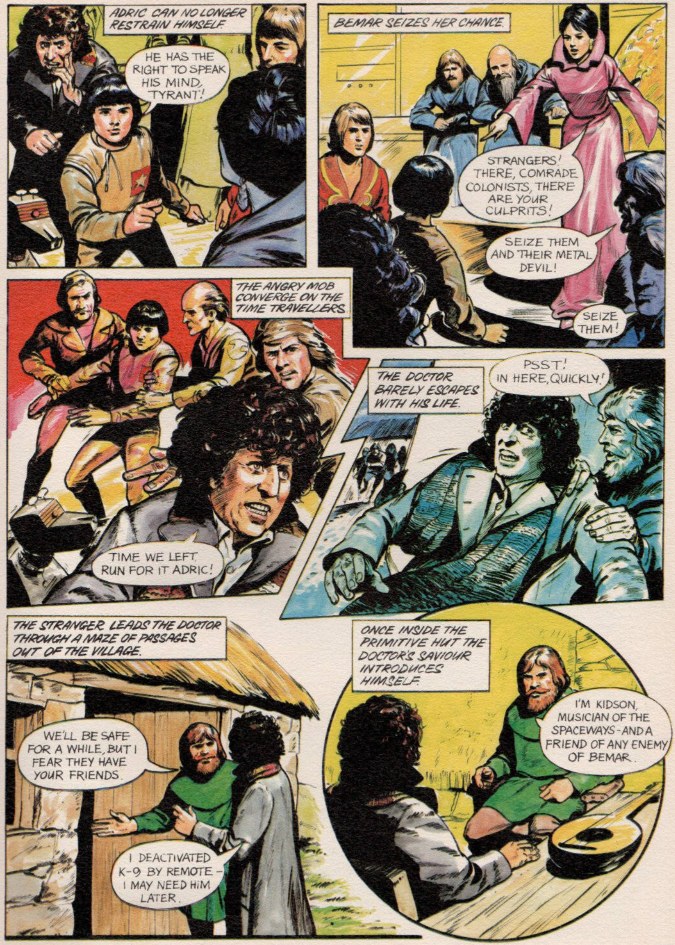
It's a fantastically-exciting show, and to understand its unique appeal properly there's really only one solution . . . you'll have to see it for yourself!

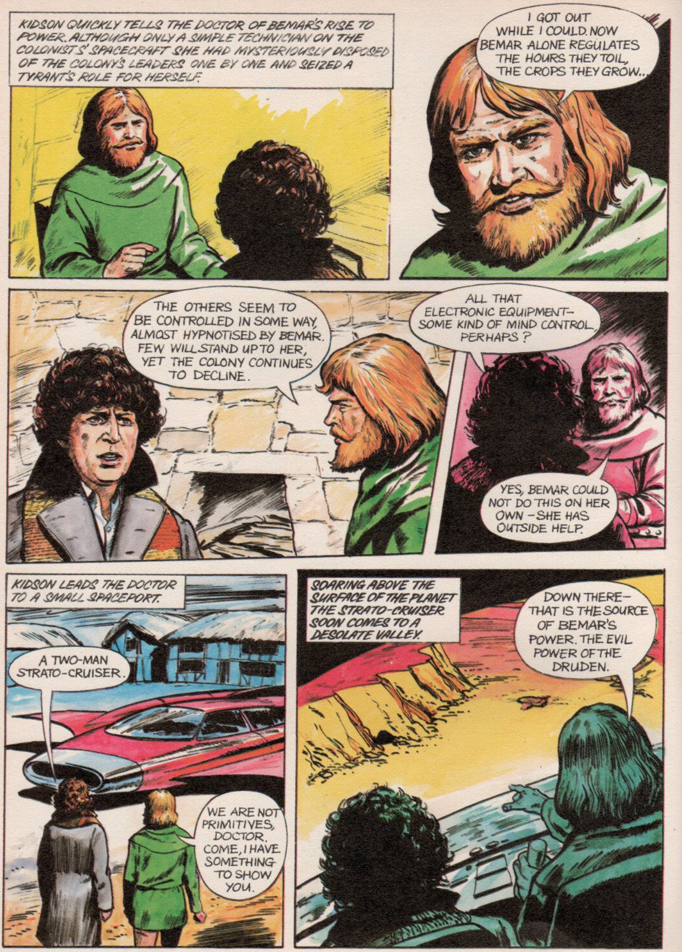
One of the dazzling images from
the Laserium laser concerts.
There are performances on most evenings.

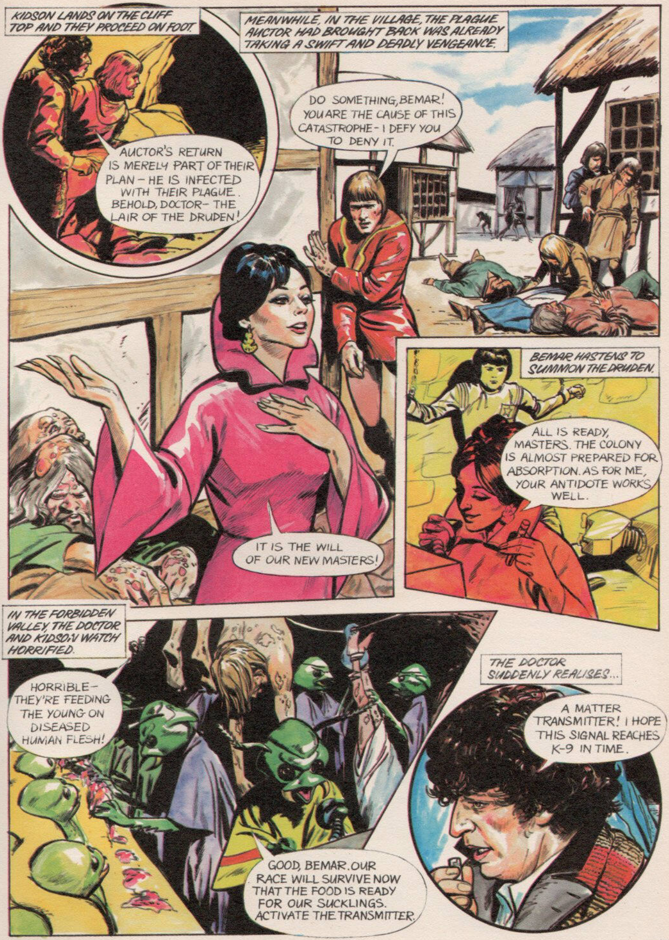


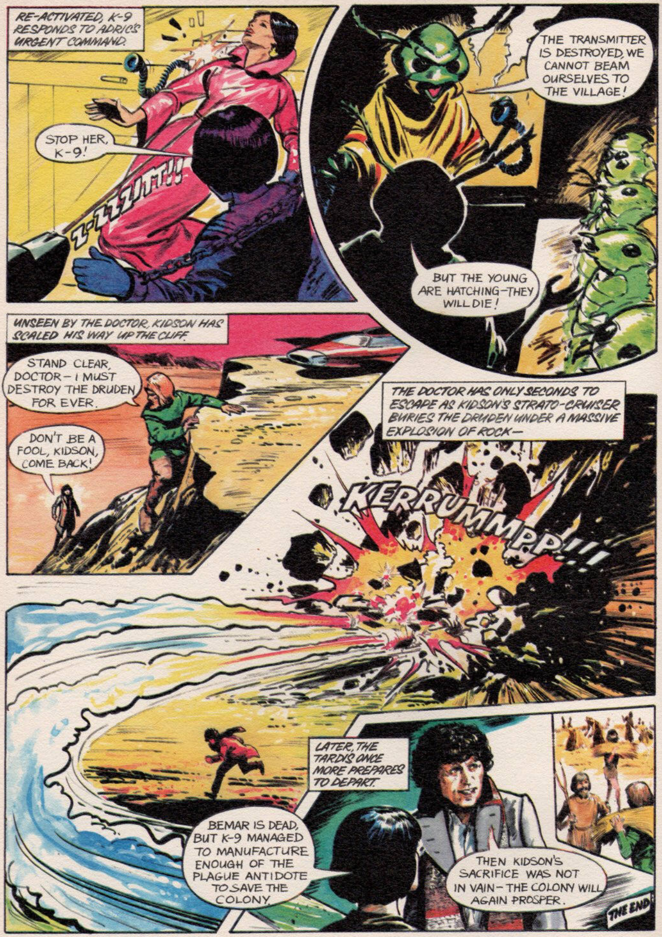

ACROSS A DESOLATE LANDSCAPE A LONE SURVIVOR FROM AN ILL-FATED EXPEDITION STAGGERS HIS WAY BACK TO THE SANCTUARY OF THE COLONY VILLAGE, LITTLE KNOWING WHAT FATE HE WAS BRINGING DOWN ON HIS FELLOW COLONISTS... THE HORROR OF A—
PLAGUE WORLD
AUCTOR
HE WAS NOT THE ONLY TRAVELLER TO ARRIVE IN THE VILLAGE THAT DAY.
PUBLIUS IS A QUITE UNIQUE BLEND OF THE RUSTIC AND THE TECHNOLOGICAL, A LIVING SYMBOL OF MAN'S ABILITY TO ADAPT AND SURVIVE.
WASN'T IT A FRONTIER COLONY FROM THE SECOND GALACTIC EMPIRE, LEFT TO SURVIVE IN ISOLATION WHEN THE EMPIRE COLLAPSED?
AFFIRMATIVE
THE VILLAGE SEEMS CURIOUSLY DESERTED.
NOT ONLY SURVIVED, BUT THRIVED.
SEEMS A BIT EMPTY AND RUN-DOWN TO ME.


K-9 PICKS UP THE NOISE OF A LARGE BODY OF PEOPLE.
SOUNDS LIKE EVERYONE'S IN HERE.
SOME KIND OF VILLAGE ASSEMBLY, NO DOUBT.
THE DOCTOR, ADRIC AND K-9 ARE GREETED BY A STRANGE SCENE
A WHOLE SERIES OF UNEXPLAINED DEATHS AND DISAPPEARANCES— AND NOW AUCTOR'S UNTIMELY FATE!
YES, WHAT WILL BECOME OF US?
THERE ARE MANY THINGS THAT ARE NOT FOR YOU TO KNOW. THE WAYS I HAVE LAID DOWN ARE BEST FOR THE VILLAGE.
M.K.POWELL
STYLO, A YOUNG WORKER IS NOT SATISFIED BY THIS.
YOU SPEAK LIKE A DICTATOR, BEMAR, NOT A LEADER.
IF YOU ARE DISSATISFIED, STYLO, YOU ARE FREE TO GO.
FREE? WHERE ARE ANY OF US FREE TO GO ON THIS TIME-FORSAKEN PLANET?
TO YOUR OWN MISERABLE FATE, IF YOU WILL.


ADRIC CAN NO LONGER RESTRAIN HIMSELF.
HE HAS THE RIGHT TO SPEAK HIS MIND, TYRANT!
BEMAR SEIZES HER CHANCE.
STRANGERS! THERE, COMRADE COLONISTS, THERE ARE YOUR CULPRITS!
SEIZE THEM AND THEIR METAL DEVIL!
SEIZE THEM!
THE ANGRY MOB CONVERGE ON THE TIME TRAVELLERS.
TIME WE LEFT. RUN FOR IT ADRIC!
THE DOCTOR BARELY ESCAPES WITH HIS LIFE.
PSST! IN HERE, QUICKLY!
THE STRANGER LEADS THE DOCTOR THROUGH A MAZE OF PASSAGES OUT OF THE VILLAGE.
WE'LL BE SAFE FOR A WHILE, BUT I FEAR THEY HAVE YOUR FRIENDS.
I DEACTIVATED K-9 BY REMOTE - I MAY NEED HIM LATER.
ONCE INSIDE THE PRIMITIVE HUT THE DOCTOR'S SAVIOUR INTRODUCES HIMSELF.
I'M KIDSON, MUSICIAN OF THE SPACEWAYS - AND A FRIEND OF ANY ENEMY OF BEMAR.


KIDSON QUICKLY TELLS THE DOCTOR OF BEMAR'S RISE TO POWER. ALTHOUGH ONLY A SIMPLE TECHNICIAN ON THE COLONISTS' SPACECRAFT SHE HAD MYSTERIOUSLY DISPOSED OF THE COLONY'S LEADERS ONE BY ONE AND SEIZED A TYRANT'S ROLE FOR HERSELF.
I GOT OUT WHILE I COULD. NOW BEMAR ALONE REGULATES THE HOURS THEY TOIL, THE CROPS THEY GROW...
THE OTHERS SEEM TO BE CONTROLLED IN SOME WAY, ALMOST HYPNOTISED BY BEMAR. FEW WILL STAND UP TO HER, YET THE COLONY CONTINUES TO DECLINE.
ALL THAT ELECTRONIC EQUIPMENT– SOME KIND OF MIND CONTROL, PERHAPS?
YES, BEMAR COULD NOT DO THIS ON HER OWN –SHE HAS OUTSIDE HELP.
KIDSON LEADS THE DOCTOR TO A SMALL SPACEPORT.
A TWO-MAN STRATO-CRUISER.
WE ARE NOT PRIMITIVES, DOCTOR. COME, I HAVE SOMETHING TO SHOW YOU.
SOARING ABOVE THE SURFACE OF THE PLANET THE STRATO-CRUISER SOON COMES TO A DESOLATE VALLEY.
DOWN THERE– THAT IS THE SOURCE OF BEMAR'S POWER. THE EVIL POWER OF THE DRUDEN.


KIDSON LANDS ON THE CLIFF TOP AND THEY PROCEED ON FOOT.
AUCTOR'S RETURN IS MERELY PART OF THEIR PLAN – HE IS INFECTED WITH THEIR PLAGUE. BEHOLD, DOCTOR – THE LAIR OF THE DRUDEN!
MEANWHILE, IN THE VILLAGE, THE PLAGUE AUCTOR HAD BROUGHT BACK WAS ALREADY TAKING A SWIFT AND DEADLY VENGEANCE.
DO SOMETHING, BEMAR! YOU ARE THE CAUSE OF THIS CATASTROPHE – I DEFY YOU TO DENY IT.
IT IS THE WILL OF OUR NEW MASTERS!
BEMAR HASTENS TO SUMMON THE DRUDEN.
ALL IS READY, MASTERS. THE COLONY IS ALMOST PREPARED FOR ABSORPTION. AS FOR ME, YOUR ANTIDOTE WORKS WELL.
IN THE FORBIDDEN VALLEY, THE DOCTOR AND KIDSON WATCH HORRIFIED.
HORRIBLE – THEY'RE FEEDING THE YOUNG ON DISEASED HUMAN FLESH!
GOOD, BEMAR. OUR RACE WILL SURVIVE NOW THAT THE FOOD IS READY FOR OUR SUCKLINGS. ACTIVATE THE TRANSMITTER.
THE DOCTOR SUDDENLY REALISES...
A MATTER TRANSMITTER! I HOPE THIS SIGNAL REACHES K-9 IN TIME.


RE-ACTIVATED, K-9 RESPONDS TO ADRIC'S URGENT COMMAND.
!!
STOP HER, K-9!
Z-ZZZITT!!
THE TRANSMITTER IS DESTROYED, WE CANNOT BEAM OURSELVES TO THE VILLAGE!
BUT THE YOUNG ARE HATCHING—THEY WILL DIE!
UNSEEN BY THE DOCTOR, KIDSON HAS SCALED HIS WAY UP THE CLIFF.
STAND CLEAR, DOCTOR—I MUST DESTROY THE DRUDEN FOR EVER.
DON'T BE A FOOL, KIDSON, COME BACK!
THE DOCTOR HAS ONLY SECONDS TO ESCAPE AS KIDSON'S STRATO-CRUISER BURIES THE DRUDEN UNDER A MASSIVE EXPLOSION OF ROCK—
KERRUMMPP!!!
LATER, THE TARDIS ONCE MORE PREPARES TO DEPART.
BEMAR IS DEAD, BUT K-9 MANAGED TO MANUFACTURE ENOUGH OF THE PLAGUE ANTIDOTE TO SAVE THE COLONY.
THEN KIDSON'S SACRIFICE WAS NOT IN VAIN—THE COLONY WILL AGAIN PROSPER.
THE END

THE MYSTERIES OF METEORITES

We know a great deal about the composition and behaviour of meteorites, but, as with many aspects of science, we don't know *everything*. Here are some of the things we do know, and some of those we don't!

Meteorites are pieces of metallic or stony matter which enter the Earth's atmosphere from outer space. They move at very high speeds, and friction with the air makes them glow, so that they look like the stars falling from the sky. This has earned them their familiar name of shooting stars, but in fact they are not stars at all.

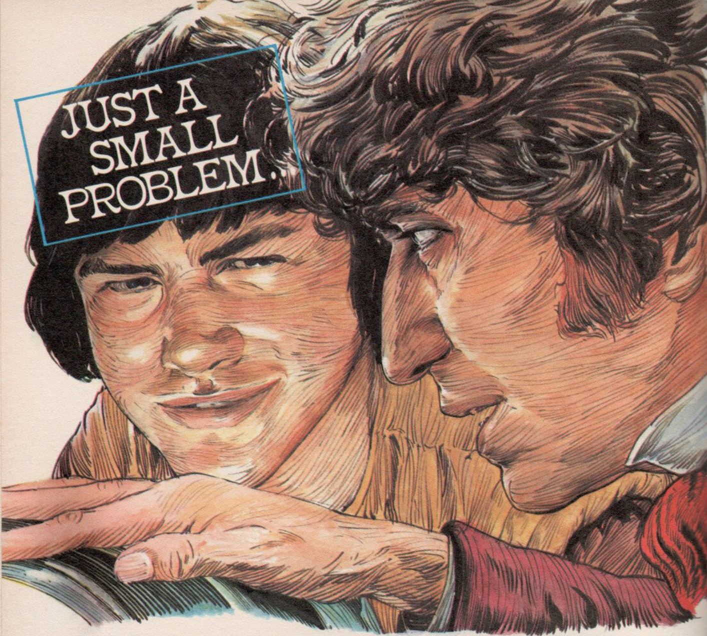
Somewhere around 100 million meteors enter the Earth's atmosphere every day, ranging in size from a grain of sand to those weighing several tonnes – which, happily, are exceptional! Many of them fall into the sea, and even those which fall on land often go by unnoticed, so that very few are actually examined by experts.

Falling meteorites are extremely hot, and this heat melts their exteriors to a form of glass. Sometimes, in fact, they become so hot that they vaporise completely, leaving no trace at all. The composition of those which vaporise obviously cannot be analysed, and when surviving meteorites are analysed, some unusual findings emerge.

Meteorites of one particular class known as the carboniferous chondite class have been found to include amino acids, and some scientists believe that this is proof of the existence of extraterrestrial life. There is also a school of thought which believes that a falling meteorite may have been the spark which triggered off life on Earth.

Probably the most famous meteorite is the one which fell onto the Earth in Siberia in 1908. Weighing an estimated 200 tons it scorched a 20-mile area around its point of impact, and flattened forests. Called the Tunguska meteorite, it fell in broad daylight, and was seen by observers hundreds of miles away.

JUST A SMALL PROBLEM.



"Well, Adric, what can you see out there?"

The Tardis had come to rest once more – the Doctor wasn't *quite* sure where! – and Adric was the first at the viewing screen, eager to know what adventures were likely to be on the agenda this time.

But, disappointingly enough, he had to admit that the answer to the Doctor's question was that he couldn't see *anything* out there. Not a thing. All was blackness and gloom.

"I think it must be the middle of the night, wherever we are, Doctor," he replied at last. "I can't see a thing."

"Strange," said the Doctor, walking over to join him at the viewing screen. "The instruments indicate that this is the planet Xiter, in the year 4095, and that at this time of day their illuminating star should be bathing the planet in light. But I see what you mean . . ." The Doctor peered into the screen, screwing up his eyes in an attempt to make out something in the darkness.

"What d'you reckon, then?" asked Adric, who had learnt by now that it didn't usually take the Doctor long to figure out the answers to any problems and mysteries. And sure enough, the Doctor's incredible brain had been sorting through the possibilities, and had already come up with the most unlikely-sounding solution.

"I reckon, Adric," he replied, "that we must have come to rest in some kind of underground cavern, where the light of the star cannot penetrate. That would explain why it is pitch dark at this time of day."

"Of course," said Adric. "That sounds right. Why didn't I think of that?"

"You probably would have done, given time," said the Doctor. "Maybe a hundred million years or so . . ." And he ducked as Adric aimed a playful swipe in his direction.

"Come on then," laughed the Doctor. "Let's explore. I've always been interested in potholing. I once tried it on Earth. I think it was around the eighth century, their time."

"I'm ready," said Adric, who was eager for a bit of excitement, even if it was only in some old cave somewhere. "What about K–9?"

"Oh yes," said the Doctor. "I'd almost forgotten K–9. I put him onto a recharge programme. Are you ready, K–9?"

"Affirmative, Master," he answered, in his clipped little voice.

The Doctor pressed the button which opened the door of the Tardis, and the three of them stepped forward. It certainly was miserably dark-looking out there, and the damp, dark air seemed to overpower them. Adric shivered. This wasn't the kind of excitement he had been looking forward to.

"Come on," said the Doctor, noticing his hesitation. "We needn't stay long if we don't like it here."

They stepped out of the Tardis. The ground was wet and slimy, and K–9 slipped and skidded. "Moisture level 8, Master," he reported.

They moved forward a foot or two at a time, gingerly testing out the ground in front of them in case they should come to any muddy patches or, worse still, underground waterways. It certainly was wet in here, that was for sure.

Adric couldn't see the Doctor's face, but from his unaccustomed silence he felt sure that he was puzzling over something. Something wasn't quite right in his calculations. Then suddenly the Doctor flung his scarf round his neck, almost knocking poor Adric over, and announced: "I've got it!"

"Got what?" asked Adric.

"I've got the answer, of course," continued the Doctor. "I was wrong in my original calculations. We are *not* in an underground cavern."

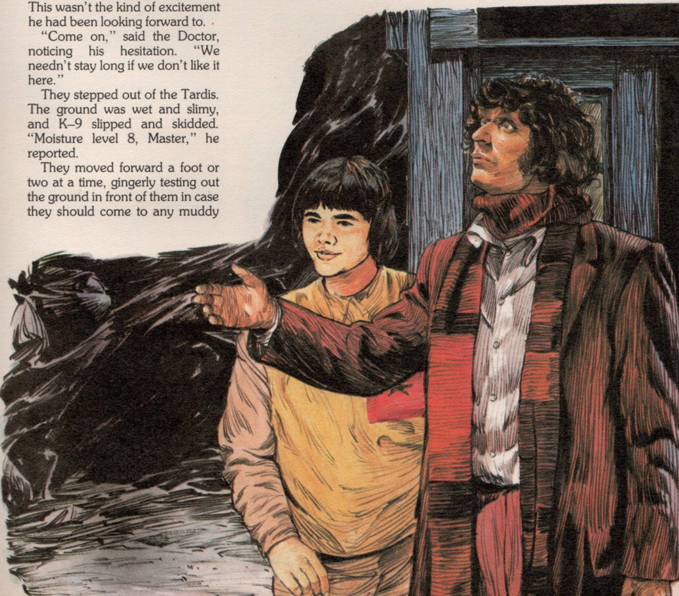
"Affirmative, Master," added K–9, who had obviously been searching through his memory banks and using his sensors to computer their exact location, and had come up with the answer at exactly the same time as the Doctor.

"Go on, K–9," said the Doctor. "*You* tell him."

"Sensors indicate humidity levels caused by high degree of organic activity," reported K–9. "Darkness caused by total encapsulation inside said organism."

Adric gave a gasp of horror. "He doesn't mean . . . you don't mean . . ."

"That's right, Adric, you've guessed it," replied the Doctor calmly. "We are not in a cavern as such. We are in the belly of a large animal."



"A very large animal, Master," contributed K–9.

Adric was stunned into silence by this appalling explanation of the dark, damp place, and a few moments silence followed, while each one of them collected his thoughts. As they stopped speaking they soon became aware of all manner of gurgling and glugging sounds, which they had not noticed before, and which were presumably caused by the activity of the animal's digestive system.

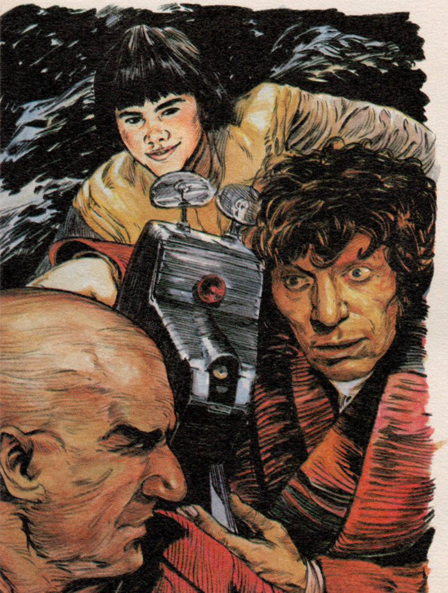
And then they heard yet another noise . . . or were they imagining it? It sounded like a human voice. Yes, there it was again . . .

"Is somebody there? Are you still alive? Over here! Help me, please!"

"Looks like we've got company in here," said the Doctor. "Let's go and find our fellow explorer. But tread carefully. We don't want to give our host indigestion."

Adric gave a hollow laugh, and wondered how it was that the Doctor always managed to retain his sense of humour, even in the most terrifyingly dangerous situations. "Alright," he agreed. "But let's hurry. The sooner we get out of here the better I'll like it."

It took them two or three minutes to reach the man who had cried out, and they found that even though he had been swallowed by the beast he was still intact, and reasonably well. He was a Xiterian, and a humanoid, and he was overjoyed to have two humanoid companions once more. He wasn't quite so sure about K–9 at first, but the Doctor soon reassured him on that point.



"Now then, quickly, we have no time to lose," said the Doctor. "Explain everything to us at once. How do you come to be in here?"

"That beast swallowed me, of course," said the Xiterian, contemptuously. "Just the same as he's swallowed four other Xiterians. I was hoping to find them still safe in here, but alas, it must be too late for them."

"Does the beast live on your planet?" asked the Doctor.

"Well, he does *now*," was the answer, "and we don't know how we'll ever get rid of him. You see, he was left behind . . ."

A terrible, deafening, horrifying sound interrupted him. It was the sound of running water, and K–9 immediately computed the source.

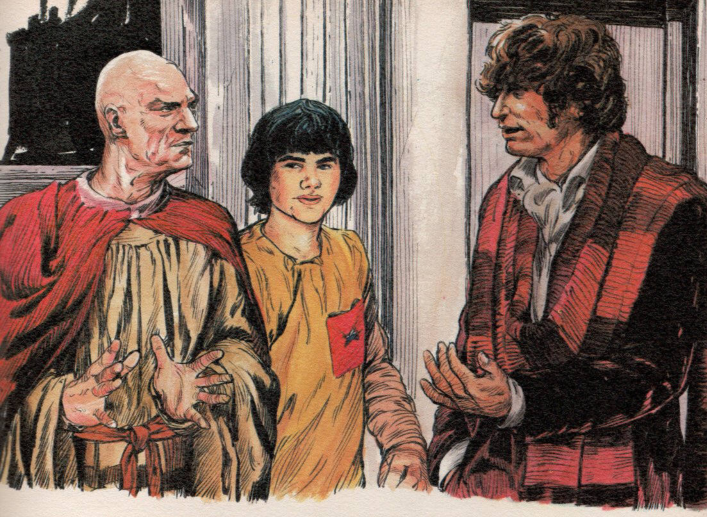
"Gastric juices, Master," he clipped. "Coming this way. We're about to be digested."

"Quick, run for the Tardis!" yelled the Doctor. "Follow me!" And the four of them made a hectic, mad dash for the safety of the Doctor's amazing vehicle. The Xiterian couldn't imagine how such an object had got inside the beast, and he couldn't even begin to understand how it could be that it was bigger on the inside than it was on the outside . . . . But none of that mattered so long as it could get them out of this fix, and it certainly seemed that it could.

The Doctor had already set the controls, and within a fraction of a second the Tardis had not only taken off, but landed too. A quick glance out of the viewing screen confirmed that this time the Tardis had performed immaculately, and they were just where the Doctor wanted to be: *outside* the beast but still close by.

Adric was dumbfounded, and even the Doctor had to admit that he was surprised. The beast was gigantic! It towered hundreds of feet in the air above them, and its massive girth would have filled a football field on the planet Earth.

"You see what we're up against?" said the Xiterian.



"Yes, I certainly do," replied the Doctor. "One could hardly *miss* seeing that fellow. But tell me, how does he come to be here? You didn't have any of these creatures the last time I visited Xiter."

"No, we didn't," replied the Xiterian, "and I sincerely hope we won't have any the next time you come, either. Fact is, he's a stray."

"Some stray," whispered Adric, who was still half hiding behind the Doctor, in awe of the creature.

The Xiterian went on: "He came here on a rocket ship with some visiting emissaries from the planet Pflugon. He was their pet, but when it came time for them to return home he had vanished and couldn't be found anywhere we searched."

"You couldn't find a creature that size?" asked the Doctor in amazement.

"No, you don't understand," said the Xiterian. "He wasn't that size then, not anything like it. He was about the size of one of our own Xiterian zlooms. Those are our pets, and they are about this big." And the Xiterian spread his hands about twelve inches apart.

"I suppose it must have been something in our atmosphere which in some way altered his growth function, but whatever happened it wasn't long after the departure of the Pflugons that we found him – that size. Since then he has caught and swallowed four of our people. I was the fifth. The rest you know."

"I see," said the Doctor thoughtfully.

"I don't know who you are," went on the Xiterian, "or how you got here, but you saved my life in there. Can you help us further? Can you think how we could get rid of him? We have been in contact with the Pflugons, who say that they are willing to have him back. But of course he is too big to fit into any of their ships. They think that he might revert to normal size once back on his home planet, but how are we to get him there?"

"Well, if all you want is a taxi service I may well be able to help you," said the Doctor. "There is something in my vehicle which we might be able to use to advantage. Adric, off you go into the Tardis. Fetch the small control panel which you will find to the left of the central console."

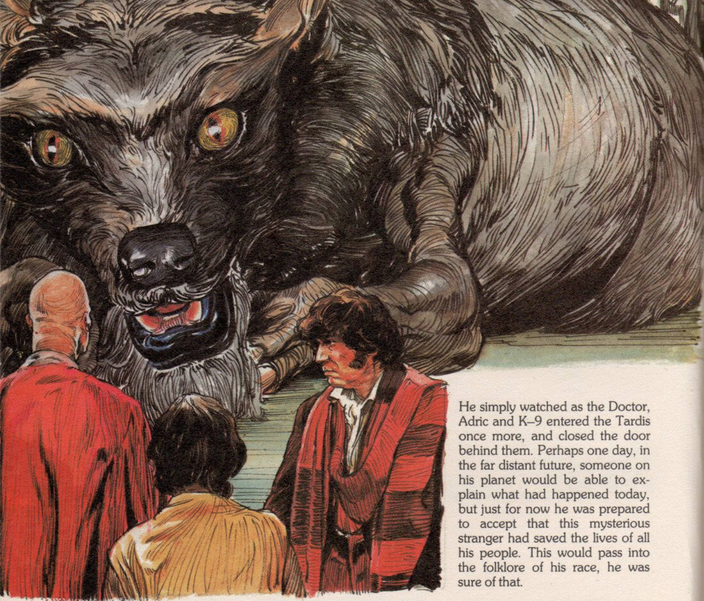
Adric was back in a moment with the device.

"It's a trans-dimensional maxi-minimizer," explained the Doctor. "I'll use it to miniaturize the beast to the size of an Earth spider, then I'll take it aboard the Tardis, and we'll just whizz it back to Pflugon for you."

The Xiterian looked astonished. "As simple as that?" he asked.

"Well, I hope so," said the Doctor. "It's never let me down before. Now then, let's get to work."

The Doctor aimed the device at



the monster, rather in the manner of a TV remote control, and pressed a few buttons. The device whirred and hummed and crackled . . . and nothing happened.

"Just give it a moment to warm up," said the Doctor, as all eyes turned towards him. "I don't do things by magic, you know."

And sure enough, a few minutes later, the device did indeed begin to work. Within seconds the terrifying beast of Pflugon was no more terrifying than an ordinary garden spider.

"Catch it, Adric!" cried the Doctor. "Don't let it get away! Here, put it in this matchbox. They're ideal for spiders."

Adric ran forward and scooped up the spider in his hands, quickly transferring it to the safety of the matchbox. This device of the Doctor's was quite something, but he had seen too much by now to be all that surprised. Every day spent with the Doctor held surprises in store.

The Xiterian was beside himself with joy. "We can never thank you enough!" he cried. "Life on this planet would not have been worth living with that creature around. Now my people will dare once more to venture out of their homes."

"Don't mention it," replied the Doctor graciously. "I was thinking of visiting Pflugon sometime soon anway. You've just brought my trip forward a millennia or two, that's all."

The Xiterian looked puzzled, but he didn't say anything more. He simply watched as the Doctor, Adric and K–9 entered the Tardis once more, and closed the door behind them. Perhaps one day, in the far distant future, someone on his planet would be able to explain what had happened today, but just for now he was prepared to accept that this mysterious stranger had saved the lives of all his people. This would pass into the folklore of his race, he was sure of that.

Meanwhile, aboard the Tardis, the Doctor was feeling a little concerned. He wasn't exactly worried, because he wasn't really what you'd call the worrying kind, but he was certainly concerned.

The trans-dimensional maxi-minimizer shouldn't really have taken any time to warm up. He had said that to reassure the others, and when it had finally worked he had been relieved, but he had had a feeling that somehow all was not as it should be, and now he was beginning to feel certain of it.

The device was constantly rattling and shaking in his hands, almost as though it were about to explode. The Doctor loosened its cover and peered inside, trying to ascertain what was wrong with it, but he couldn't pinpoint the problem. He thought back to the last time he had used it, on a gang of unruly Zils some four hundred years ago. That was it! One of them must have tampered with it when he returned them to their normal size, just to get even with him. "I suppose I should have checked it since then," he said to himself. "Somehow I don't seem to have had time . . ."

But a shriek from Adric broke through his reverie, and he turned to where the boy was frantically pointing, with a look of sheer terror on his face. "Doctor, Doctor!" he cried. "It's the matchbox, look!"

Sure enough, exactly what the Doctor had feared really was happening. The effects of the trans-dimensional maxi-minimizer were wearing off, and the 'spider' was returning to its former size! The matchbox was beginning to split . . . . Soon the creature would emerge from its confines, and then there would be no holding it. Unless the Doctor could repair the maxi-minimizer in time!

The Doctor thought hard. He enlisted K–9's help too, and the faithful dog's memory banks glowed red hot as he desperately tried to extract the correct information for the repair. At last the Doctor thought that he had isolated the problem, and that he could fix it. Moments later he had done all he could do. He thought that the device would now work perfectly, but he couldn't be sure until he gave it a practical test.

"What are you waiting for, Doctor?" asked Adric anxiously.

"I must warn you, Adric," said the Doctor solemnly. "I have done the best repair I am able, but I can't be sure if it will work. If it does not, it could have the opposite effect, and of course the monster would then assume immense proportions and in all possibility the Tardis could disintegrate, and we would all perish."

"But can't you test it before you use it on the beast?" asked Adric.

"No," replied the Doctor. "It will only work on living organisms, and if I test it on myself and it fails we will still perish, because you cannot possibly land the Tardis safely. If it does not work as it should, I could well be shattered into a thousand pieces."

"Then test it on me, Doctor," said Adric. "I am dispensable. Even if I perish you will be able to land the ship safely."

The Doctor was astonished. The boy had been an Outler, with all the lax ways which that implied. And yet here he was, offering to give up his life to save the Tardis. The boy would never cease to amaze him.

"Adric, you are a very brave boy," was all he said.

Then, because they were running out of time, and there really was no other way out, the Doctor tested the trans-dimensional maxi-minimizer on Adric. The boy shrank to the size of an ant, and then, with one or two more flicks of a switch, he returned once more to his normal size.

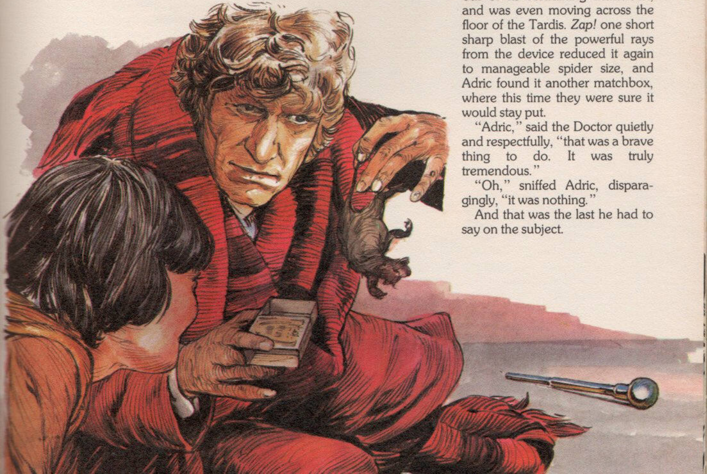
"It works, Adric!" cried the Doctor.

He didn't waste another second in turning the device on the beast, which had by now fully broken out of its restraining matchbox, and was even moving across the floor of the Tardis. *Zap!* one short sharp blast of the powerful rays from the device reduced it again to manageable spider size, and Adric found it another matchbox, where this time they were sure it would stay put.

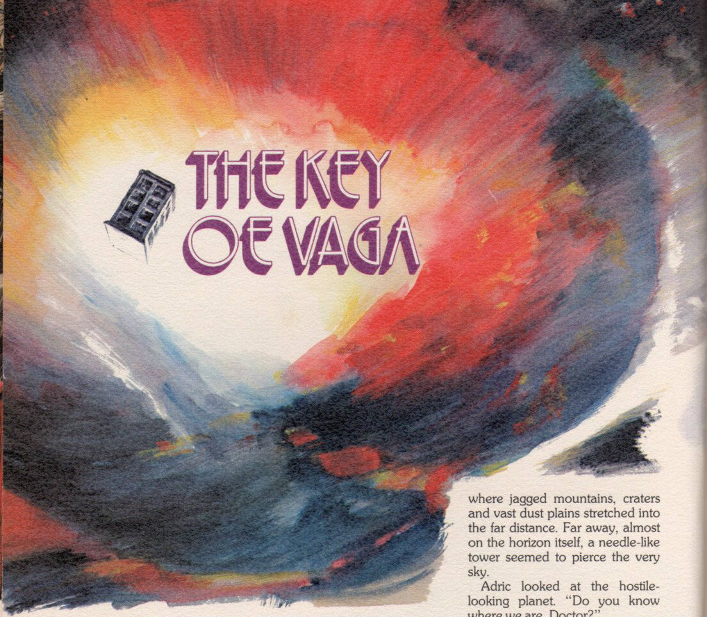
"Adric," said the Doctor quietly and respectfully, "that was a brave thing to do. It was truly tremendous."

"Oh," sniffed Adric, disparagingly, "it was nothing."

And that was the last he had to say on the subject.



THE KEY OF VAGA



"Have we landed somewhere?"

Adric's voice broke the awkward silence that followed the Tardis's somewhat bumpy entrance into the Eighth Dimension.

"Er . . . well, I'm not quite sure, actually," said the Doctor, crawling on his hands and knees around the control console. "There seems to be a fault on the modular transmission linkage."

"Which means?"

"It means that I don't know whether we've landed somewhere – or whether we haven't," said the Doctor, poking his sonic screwdriver into a heavily wired panel. "Can't understand it, it was working perfectly four hundred years ago . . . ."

"Do you think the turbulence damaged it?" asked Adric, peering over the Doctor's shoulders.

The Doctor shrugged. "It shouldn't have done. It's probably just a loose connection in the relay." He tapped a heavy metal inspection plate with his foot. "I'll have to remove this thing and check out the circuit. It could take quite a long . . . ."

The Doctor stopped speaking as the Tardis shuddered violently, and a coil sparked by his elbow. Immediately, the viewing screen flickered into life.

Adric glanced questioningly at the Doctor, but the Doctor said nothing; he was studying the image that had appeared on the screen. It revealed a landscape where jagged mountains, craters and vast dust plains stretched into the far distance. Far away, almost on the horizon itself, a needle-like tower seemed to pierce the very sky.

Adric looked at the hostile-looking planet. "Do you know where we are, Doctor?"

"I think so," said the Doctor, his eyes glued on the needle-like tower. "But I'll check with the computer."

The machinery whizzed softly for a couple of seconds. "WE-ARE-ON-THE-PLANET-OF-VAGA", it reported. "STAR-SYSTEM-MAGNA".

The Doctor adjusted the screen's controls to bring the distant tower into clearer focus. "Just as I thought. We are on Vaga, possibly the most unfriendly place there is."

"Is the whole planet as desolate as this?" Adric asked, motioning towards the bleak dustscape on the screen.

The Doctor turned to face his companion. "It is now," he answered. "Though it wasn't always so. As I said, we are on the planet Vaga, star system Magna where, unlike most solar systems, the suns orbit the planets. In this sector there are four planets, but only Vaga and the neighbouring planet Pyron have produced life-forms. Vagans, whose planet is unique in that it had two suns, were peaceful people who built beautiful cities and gardens, and used their star-craft to explore the distant regions of this galaxy.

"The Pyrons, on the other hand, were a warlike race whose more primitive technology was directed into building more and more dreadful weapons. Eventually they produced a weapon so powerful that they were able to extend their aggression beyond their own world. About two thousand years ago they fired a plinium missile into the centre of Vaga's larger sun: what you are witnessing on the screen is the result. Within one Vagan year the entire population was dead, the cities had crumbled and the vegetation disappeared."

"So a whole world and its people were destroyed," said Adric.

The Doctor shook his head. "Not quite. Everything on the planet's surface died, but there *were* survivors. Vagan scientists had developed an inter-dimensional time-space craft – something similar to the Tardis – and a few people managed to escape the holocaust." He pointed to the silver needle on the skyline. "You see that tower? That is the Key of Vaga, and the one thing on the planet's surface that the Pyrons couldn't destroy. I helped with its design. It's a dimensional key, to be used should the Vagans who survived ever wish to return to their home planet."

The two of them looked out at the metallic tower and, as they looked, saw it begin to pulse with a soft silvery light.

"Oh, no," said the Doctor quietly. He urged Adric towards the door. "Come on, we haven't a moment to lose!"

The dust billowed up in dense clouds as they ran, covering them from head to foot and catching in their eyes and throats.

When they eventually reached the foot of the silvery tower, Adric was breathing very heavily. "Wouldn't it have been easier to bring the Tardis here?" he gasped.

"Unfortunately not," the Doctor replied, gazing up to the point of the needle-like tower, which was glowing, on and off, on and off, like a bright beacon against the gloomy sky. "You see, Adric, two inter-dimensional craft cannot exist together in the same temporal-space frequency; the reversal of polarity continuum would blast the entire planet into a heap of rubble. I have to get inside the Key and delay the Vagans' entry, otherwise we'll all end up as particles of space-dust."

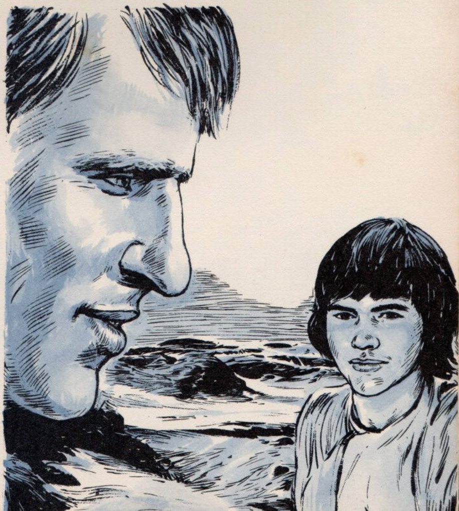
"But why not take the Tardis out of the Eighth Dimension before the Vagans get here?" Adric persisted.

"Because I have no way of determining where the Vagans *are* at this moment, and without knowing that I couldn't risk the power-surge of a take-off. The result could be just as catastrophic."

Adric had by this time circled the base of the tower. "But how do we get in?" he asked. "There is no entrance."

"We use this," the Doctor replied, taking out his sonic-screwdriver. "*If* I can remember the correct sequence." He switched the screwdriver through a sequence of sonic frequencies, pausing after each one to listen for a responding sound to echo from within the tower.

Adric stood silently, gazing at the extinct planet. The sky seemed the same colour as the thick dust which covered everything. The dead presence of the mountains crowded in on him, and the air was laden with a sense of approaching doom. From the



deep craters that gaped around him a terrible silence seemed to grow and thicken.

He started when the Doctor cried, "Done it!" The last bleep of the sonic screwdriver found its echo in the heart of the tower and a small panel sprung open.

"Now," said the Doctor, "it's just a matter of resetting this transducer coil and finding the frequency co-ordinates of the Vagan craft." He rummaged inside the small opening panel. "There!" he said at last, withdrawing his hands. "That should give us enough time to get back to the Tardis and away without blowing up half the universe."

The light from the tower dimmed, as if someone had pulled out a plug.

"Come on," said the Doctor, striding back towards the Tardis.

They were in sight of the Tardis when the sky fell in – at least, that's what seemed to be happening. A brilliant red flash lit up the sky, and rocks and boulders were showering down like huge raindrops.

Adric picked himself up from the ground, rubbing his eyes, and looked all around. There was no sign of the Doctor.

Adric shrugged his shoulders.

Another flash seared the air to his right. A small crater a hundred yards away seemed to explode, sending hot dust up in a solid cloud. Somewhere overhead the scream of engines shook the sky. Smoke and dust swirled around them. Adric threw himself behind a huge rock and screwed up his eyes in an effort to see through the thick dust, which seemed to eat into his skin. "Where is the Doctor?" he said through gritted teeth.

A dull muffled sound seemed to answer, and Adric noticed that a huge pile of rubble seemed to be moving slightly . . .

He pulled and scrabbled at the rocks with his hands, and soon the Doctor emerged, shaking off dust and debris as he struggled to his feet. "Now who did that?" he demanded of no one in particular.

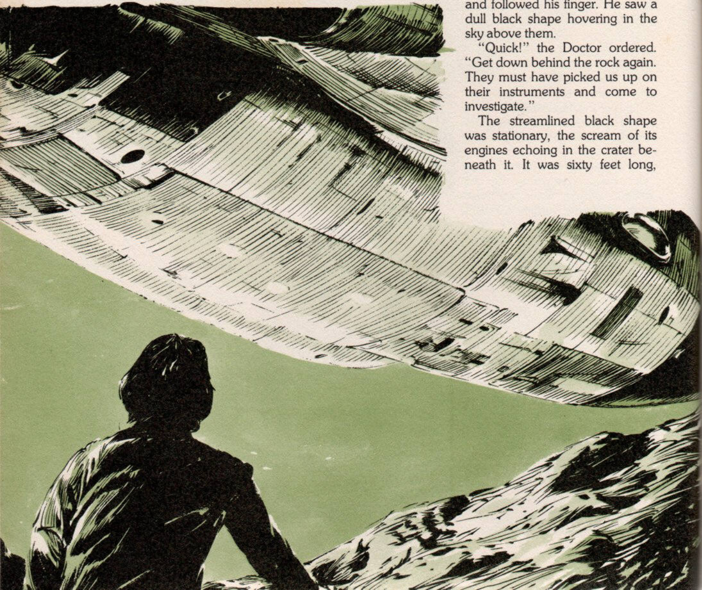
His answer came in the form of another blinding flash, a fierce wave of scorching heat and another ton of mushrooming dust. This time, however, the large rock shielded them from the force of the explosion.

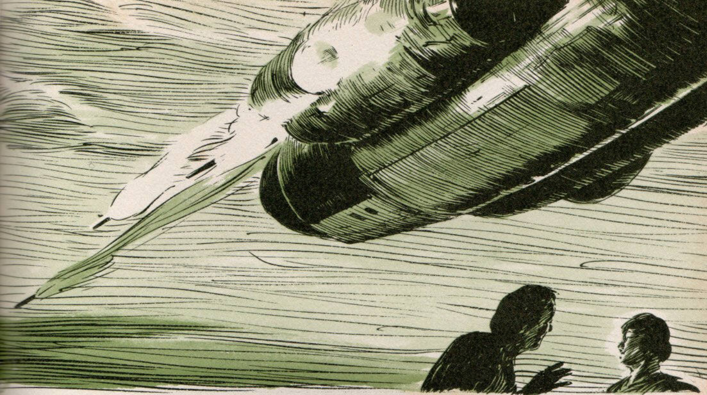
When the dust had settled a little, the Doctor pointed. "Pyrons!" he exclaimed. "There! Between those two crags!"

Adric screwed up his eyes against the biting, swirling dust, and followed his finger. He saw a dull black shape hovering in the sky above them.

"Quick!" the Doctor ordered. "Get down behind the rock again. They must have picked us up on their instruments and come to investigate."

The streamlined black shape was stationary, the scream of its engines echoing in the crater beneath it. It was sixty feet long,





tapering from a wide, flat nose section to a finned tail. It resembled some sort of monstrous flying shark. Through observation panels which formed the space-shark's 'teeth', helmeted figures were just visible.

"Some investigation," said Adric.

"Yes," the Doctor agreed. "That's the trouble with the Pyrons. They do have this tendency to fire first and ask questions later. The problem is that unless we can reach the Tardis, there's not going to be a later. For any of us. In seven minutes the Vagans will have re-entered the frequency."

"But we'll never do it," said Adric. "The Pyrons are between us and the Tardis. They'll blow us to bits before we've covered half the distance."

"I know," said the Doctor, glancing around. "There's only one thing to do. You must provide a distraction for the Pyrons, while I get to the Tardis and send it back into another dimension. Now that I know the Vagan co-ordinates, I can set the automatic controls to bring it back in one hour. I daren't leave it any longer than that because the Vagan entry may upset the frequency spectrum enough to affect the return log in the transference system, and we'd never get the Tardis back into this dimension."

Adric realised that the Doctor was right – it was their only chance. To stay would mean certain death when the Vagans transferred through the dimensional barrier. This way at least gave them an hour's grace. Adric didn't relish the thought of being the quarry for the Pyron warship, but the Doctor was the only one who could send the Tardis into another dimension and bring it back. Time was running out.

"Those Pyron missiles are designed to wipe out large cities," the Doctor continued. "They're not so effective against small, moving targets. If you keep to the cover of the rocks and zig-zag, I think you'll have a good chance of keeping one step ahead of them. This infernal dust will help. Remember, *they* can't see you any better than *you* can see them."

The heightened scream of the Pyron engines cut short any further discussion. "They're beginning to sweep the area to find us," said Adric.

The Doctor nodded as the warship rose high above the yawning crater, its nose aimed directly at them. "Run!" he said. "Now!"

When he was sure that Adric was safely away, with the Pyrons in pursuit, the Doctor ran down to where the Tardis stood, half buried now in the clinging dust. In the distance, the Key of Vaga had begun to pulse again . . . .

The Tardis faded out of the Eighth Dimension, and for a moment the Doctor could see nothing through a thick curtain of dust. He could still hear the shrill whining of the Pyron space-shark, and every now and then came the muffled sound of exploding missiles. As the dust settled, he caught sight of Adric ducking behind a large overhang of rock. Away to his left the Pyron craft was hovering, its pursuit tactics halted by the sudden appearance of a shimmering silver sphere, which hung suspended over the needle of the silver tower.

Adric watched from the shelter of the rock as the malign warship swung to face the intruder. Two Zargon missiles spat from its underbelly and sped towards the heart of the sphere. The aura around the sphere began to expand, and the missiles, entering the radiance, exploded harmlessly. Three more missiles sprang from the Pyron shark, and three more harmless explosions starred the sky as the aura extended further and further.

The Pyrons wheeled their craft away in a wide arc, like a shark circling its prey, ready to renew the attack. The sphere remained motionless, poised immediately above the point of the Key, seemingly heedless of the Pyron manoeuvres. The tortured note of the Pyron engines was deafening as the ship dived. The plinium warhead ripped out from under the black nose, burning a livid trail towards the Vagan machine.

The blast that followed ripped the air apart. It was as if the whole planet had flared up like an exploding star. The sheer brilliance of the flash seemed to burn through their closed eyelids and imprint itself on Adric's brain. When next he dared look up, the Vagan sphere was alone in the sky, its aura reduced to a glowing halo. The Pyron shark had disappeared completely, consumed in the blast of the prematurely exploding warhead.

"Not a bad design of mine, that beta-force field," said the Doctor, strolling up to Adric. "Are you alright?"

Adric nodded cautiously. "Yes."

"Well, we're not out of the woods yet," said the Doctor. "The Vagans don't know about the Tardis. We must warn them somehow."

"There is no need for that," said a quiet voice behind them. "We have full knowledge of the facts."

The Doctor and Adric turned to see a tall figure standing on a rock. A strangely beautiful face smiled at them, and below the face fell a robe of flowing silver light. The figure's hands were held together in the manner of a greeting.

"Valtar!" said the Doctor. "Good to see you! How long has it been? Must be about two thousand years!"

"It has been a long time, my friend," said the figure, "but your help and friendship have not been forgotten. We survivors of Vaga were returning for a last look at our old world before departing for the vastness of time-space when our instruments registered a similar craft to our own leaving the dimensional frequency. When we materialised and found you here, we realised the situation."

"I'm glad you came when you did," said Adric. "Those missiles were getting closer."

"Alas, time has not changed the Pyrons," said Valtar sadly. "And though we of Vaga hate violence, it is fitting that the Pyrons should have perished at their own hand. In this small way we have been able to repay something of the great debt we owe the Doctor. But now we must leave this dimension before the Tardis reappears."

"But how will you get back to your own ship?" Adric asked.

Valtar smiled. "I am there now. What you see is pure thought projection. Goodbye, my friends. We of Vaga wish you peace."

As they watched the figure shimmered into a silver mist, then floated away. Soon it had completely disappeared.

"Look!" said Adric, pointing to the tower.

The Doctor turned in time to see the Vagan sphere vanish from its place above the Key.

Back inside the Tardis, the Doctor and Adric took one last look at the desolate landscape of the planet.

"Do you think the Vagans will ever return?" asked Adric.

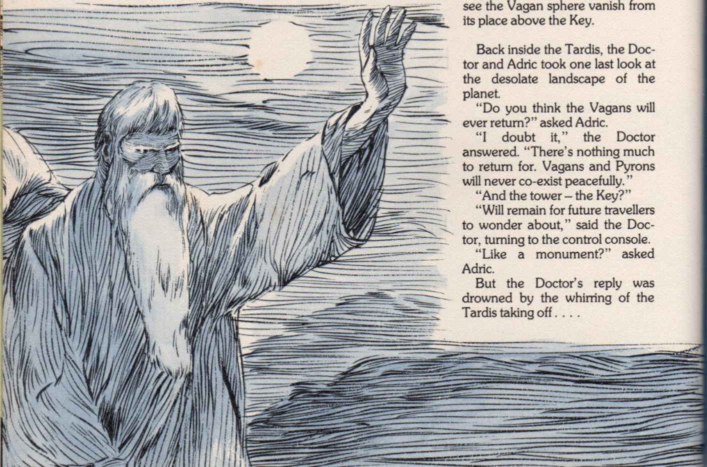
"I doubt it," the Doctor answered. "There's nothing much to return for. Vagans and Pyrons will never co-exist peacefully."

"And the tower – the Key?"

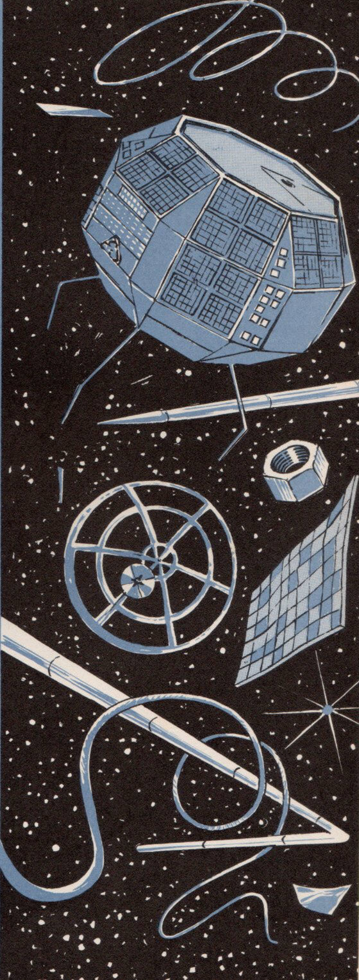
"Will remain for future travellers to wonder about," said the Doctor, turning to the control console.

"Like a monument?" asked Adric.

But the Doctor's reply was drowned by the whirring of the Tardis taking off . . . .



KEEPING A WATCH ON SPACE



At the last count there were almost 4,500 man-made objects floating around in space. What exactly are they all? And is anyone keeping a watch on them?

THE SPACE JUNK-YARD

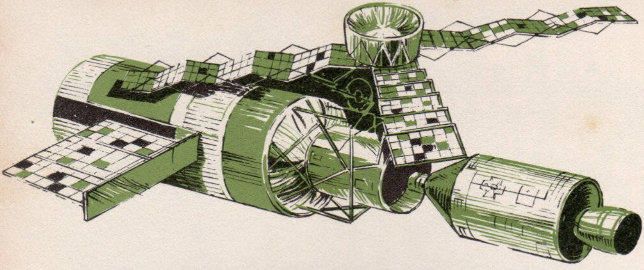
There's such an assortment of stuff out there that a traveller from a far-distant planet might easily get the idea that earthmen had decided to open a vast junk-yard in space. It seems that in his headlong race for the stars man has almost succeeded in making space as untidy as he has made his own planet.

But let's examine just what those 4,500 objects are . . .

First of all there are about 800 active and working satellites, engaged in research of various kinds. Some are sending back data on the sun and cosmic rays, others are studying the weather, and many are involved in military reconnaissance. A number are taking useful and revealing photographs of the earth from above, and still more are used for communications, and the relaying of live coverage of world events.

The remainder of those thousands of man-made objects could probably best be described as 'space debris'.

Some are fragments of old space vehicles which have outlived their usefulness and which have been blown up by self-destruct mechanisms. Others are larger pieces such as complete metal panels which have broken off various spacecraft by accident. There are quite a number of assorted nuts and bolts floating around, and there is even, we are led to believe, an astronaut's glove in orbit.



ALL PRESENT AND CORRECT

Amazing as it may seem, almost every one of the objects in the space junk-yard is constantly being 'watched', and its progress is continuously charted on earth.

A network of tracking stations around the world feed their findings to the computers at the Space Defence Centre, located inside Cheyenne Mountain, near Colorado Springs in the USA. One of the links in this sophisticated worldwide chain is the £45 million Ballistic Missile Early Warning System station at RAF Fylingdales, near Whitby in Yorkshire.

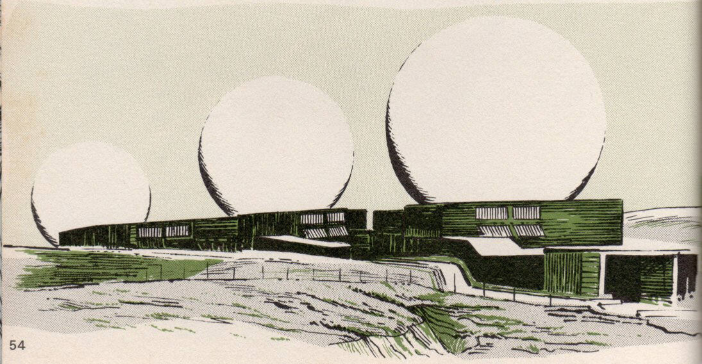
Primarily intended for defence duties, the station also performs the routine day and night task of tracking hundreds of items of space debris, and reporting on their status.

For the items in the space junk-yard are by no means always the same. There is constant change. New objects appear from various sources, and old ones break up or explode. Some go into orbits further and further away from our earth, and finally depart for the vast unprobed reaches of deep space.

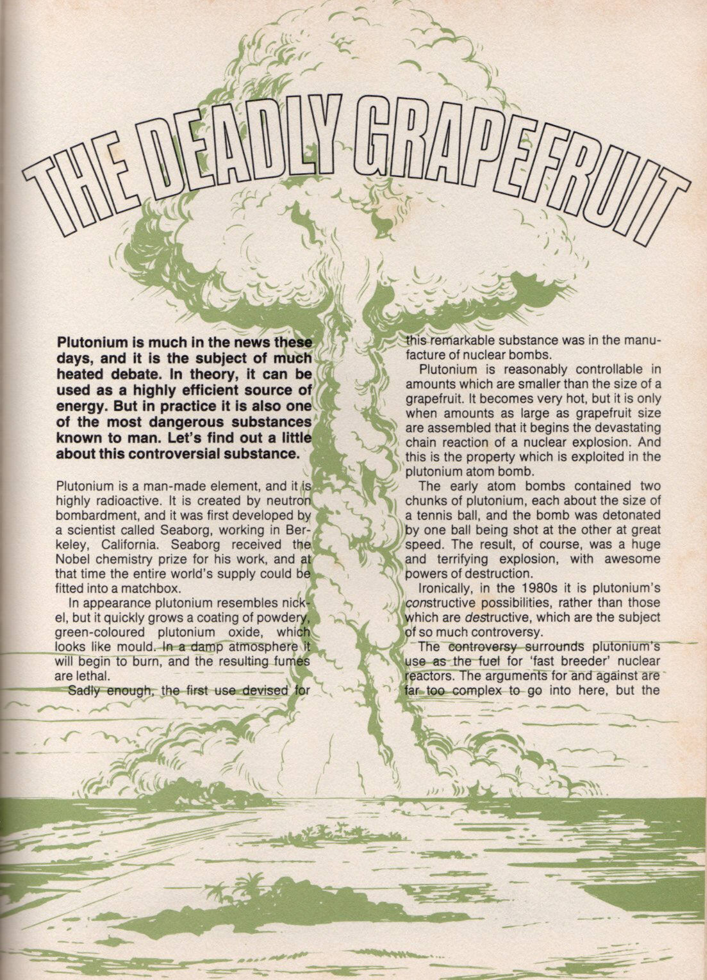
Still others, of course, re-enter the earth's atmosphere, and this is one time when it is important that we know what's going on. Probably the most dramatic occurrence of this kind came in 1979, when the American research station Skylab came hurtling down to earth, to land in thousands of pieces over Australia.

No one was hurt in the Skylab incident, but of course if it had come down over a highly-populated city it could have been a different story. In such an event information from the tracking stations would have been of vital importance, and the city could have been evacuated, thus saving many lives.

Isn't it a good thing that someone has their eye on our amazing space junk-yard?!



THE DEADLY GRAPEFRUIT



Plutonium is much in the news these days, and it is the subject of much heated debate. In theory, it can be used as a highly efficient source of energy. But in practice it is also one of the most dangerous substances known to man. Let's find out a little about this controversial substance.

Plutonium is a man-made element, and it is highly radioactive. It is created by neutron bombardment, and it was first developed by a scientist called Seaborg, working in Berkeley, California. Seaborg received the Nobel chemistry prize for his work, and at that time the entire world's supply could be fitted into a matchbox.

In appearance plutonium resembles nickel, but it quickly grows a coating of powdery, green-coloured plutonium oxide, which looks like mould. In a damp atmosphere it will begin to burn, and the resulting fumes are lethal.

Sadly enough, the first use devised for this remarkable substance was in the manufacture of nuclear bombs.

Plutonium is reasonably controllable in amounts which are smaller than the size of a grapefruit. It becomes very hot, but it is only when amounts as large as grapefruit size are assembled that it begins the devastating chain reaction of a nuclear explosion. And this is the property which is exploited in the plutonium atom bomb.

The early atom bombs contained two chunks of plutonium, each about the size of a tennis ball, and the bomb was detonated by one ball being shot at the other at great speed. The result, of course, was a huge and terrifying explosion, with awesome powers of destruction.

Ironically, in the 1980s it is plutonium's *con*structive possibilities, rather than those which are *des*tructive, which are the subject of so much controversy.

The controversy surrounds plutonium's use as the fuel for 'fast breeder' nuclear reactors. The arguments for and against are far too complex to go into here, but the anti-nuclear lobby have two major worries. First, they are concerned about the horrifying destructive power which would be unleashed in the event of a major accident at a nuclear power station, and secondly there are fears that one of those 'deadly grapefruits' could possibly get into the hands of a terrorist organization, with obvious implications.

The pro-nuclear lobby argue that the world has an immediate energy problem, which could be solved relatively cheaply by the introduction of fast breeder reactors, and also that it must surely be theoretically possible to make power stations completely accident-proof and terrorist-proof.

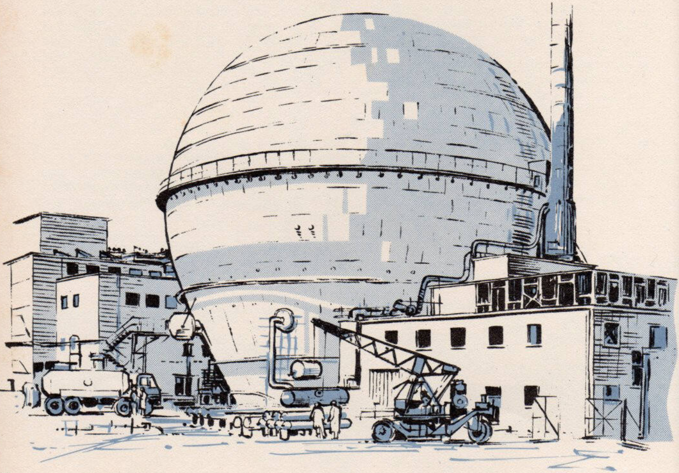
There are eminent and highly-respected scientists on both sides of this debate, and it is difficult for the layman to come to a decision for or against the manufacture of more plutonium. It is undeniable, however, that there are risks involved.

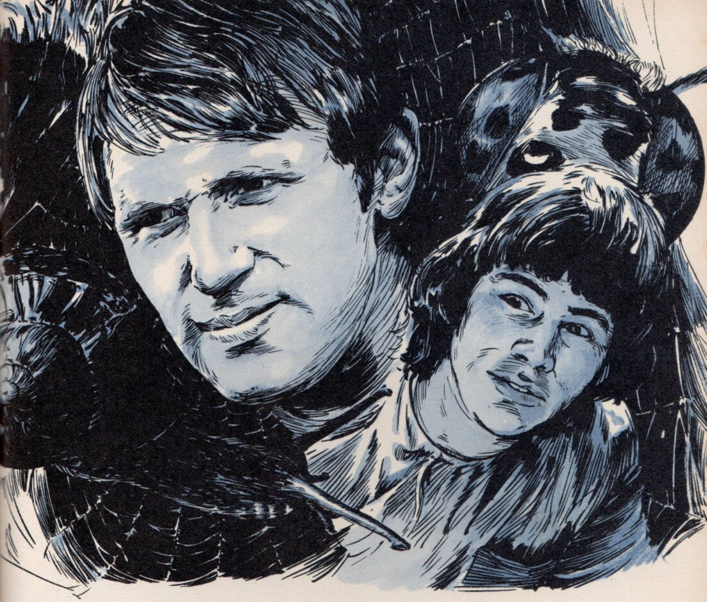
Plutonium is manufactured as a by-product of uranium-fuelled nuclear reactors. The process begins when the spent reactor fuel rods are sent to a reprocessing plant, and are chopped into pieces and dissolved in nitric acid. Treatment by an extensive series of solvents eventually isolates the pure plutonium.

Simple enough, it may seem. But the danger from radioactivity is so great that every stage of the process must be shielded inside 2 metre thick concrete cells. Moreover, the equipment used must be totally reliable and simple to use, because if anything went wrong the cells are so highly radioactive that no one could possibly enter them to attend to the fault.

Briefly, those are a few of the facts about plutonium. As you can see, it is a unique substance. On the one hand, it could solve the world's energy problems, and keep us all warm and comfortable for centuries to come. On the other hand, it could blow us all to bits. Should we go on using it?

What do you think?





PLANET OF FEAR

The Tardis landed with a soft scudding sound, and the Doctor walked across to the viewing screen. "Yes, I think this should be very interesting," he said. "Very interesting indeed."

Adric joined him at the screen. "Interesting?" he said, scanning the view through the screen. "It's just a plain old forest-covered planet, surely? What could there be to interest us here?"

The Doctor still gazed through the screen. All that could be seen was dense, impenetrable forest. As far as the eye could see stood serried ranks of tall, ramrod-straight trees stretching up into the dense canopy of leaves above them, shading the forest floor in a grey-green gloom. "What is there to interest us here?" the Doctor repeated. "Let's wait and see."

The Doctor turned to his array of instruments, and read from the computer display panel: "We are on the planet Ixos-4, which enjoys a reasonably temperate climate. The whole planet is thickly forested and though there is little animal life, the atmosphere will sustain some forms of life."

"But will it sustain *us*?" asked Adric, glancing again at the hostile-looking forest.

"Yes, nothing to be alarmed about on Ixos-4," said the Doctor, putting his finger on the door-control button on the console. "Come on, Adric, let's go out and take a look around."

They stepped from the Tardis onto a thick, mattress-like floor of rotting leaves and vegetation.

"This is a great place," said Adric, looking around with distaste. "It smells like a rotting compost heap." He shivered. "And it's cold."

"Hardly surprising," the Doctor replied, peering around through the gloomy atmosphere. "It would take an extremely powerful sun to penetrate that roof of leaves." He kicked at the thick vegetation beneath his feet. "It seems on Ixos-4 it's a case of leaves, leaves . . ."

". . . and yet more leaves," Adric concluded. "So what's of interest here? Somehow I've never thought of you as someone who has an abiding interest in greenery."

"No, neither have I," said the Doctor, who was still looking around in every direction, almost as if he expected to see something other than the trees. "It's just that on my travels I've heard a few interesting tales concerning Ixos-4. I just wanted to see the planet for myself."

"And what *were* those tales?" Adric asked.

"Well, it seems that . . ."

The Doctor's words were interrupted when Adric gasped in horror and cowered behind the Doctor. "Oh, no!" he cried. "Look! Over there!"

What Adric saw was a huge pair of tapering antennae as they emerged from the gloom. As they came into focus in the diffused light Adric was able to identify the body of a huge centipede, its brown, shiny body glinting as it moved, snaking through the trees. As the enormous creature came closer and its huge size became more apparent, Adric turned and was about to run for the Tardis when the Doctor caught his arm and held it firmly.

"What are you doing?" Adric cried. "Come *on*!"

"No, stay here!" the Doctor ordered, following Adric's horrified gaze. "Stay here and tell me what you can see."

"Tell you what I can see!" Adric cried, in a mixture of horror and amazement. He stabbed his finger towards the centipede. "Nothing much, just a centipede the size of a seven-storey building. A centipede that's heading right for us!"

Adric made to pull away from the Doctor's grasp, but he was held firm. In panic, he wrenched his arm free, and started to run back towards the Tardis, only to stop in his tracks as he approached it. "Oh, no."

There, coating the Tardis with a thick, mucous slime was an enormous grey slug, glistening wetly in the dark atmosphere. As he watched, horrified, it moved, its soft bulk settling again to completely cover the Tardis.

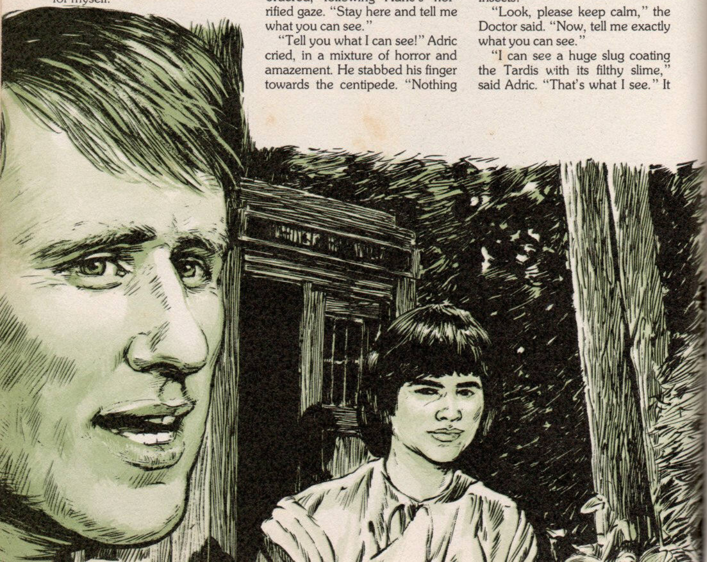
Adric turned as the Doctor caught up with him.

"Why on earth did you rush off like that?" the Doctor asked. "It's just not like you to panic because you see a few insects around."

"A few insects!" said Adric. "You call these monsters a few insects?"

"Look, please keep calm," the Doctor said. "Now, tell me exactly what you can see."

"I can see a huge slug coating the Tardis with its filthy slime," said Adric. "That's what I see." It



was an effort for him to speak calmly, and his hands clenched and unclenched as he spoke.

The Doctor followed Adric's gaze towards the Tardis, but looked completely unconcerned. "A slug?" he asked.

Adric was losing the little patience he had left. "Can't you *see* it?" he cried. "It's only ten times the size of the Tardis!"

The Doctor shook his head. "No, Adric, I can't see it."

"You can't see it," Adric spoke almost in a whisper, "but I can. And I want out of here. Right now!"

Adric glanced around, and shuddered as more and more huge insects appeared through the trees. He closed his eyes in a mixture of anger and horror. "Look around you," he seethed. "Can't you *see* them? Or am I going out of my mind?"

The Doctor stood in front of Adric. "No, I can't see them, and no, you are not going out of your mind. You must believe me – there is nothing here to be afraid of. Don't you realise that the things you can see – whatever they are – are really harmless?" He waved his hand around airily, dismissively. "Don't you realise that they don't really exist? That they are just figments of your imagination?"

"But they're *here*!" cried Adric. "They're all around us!"

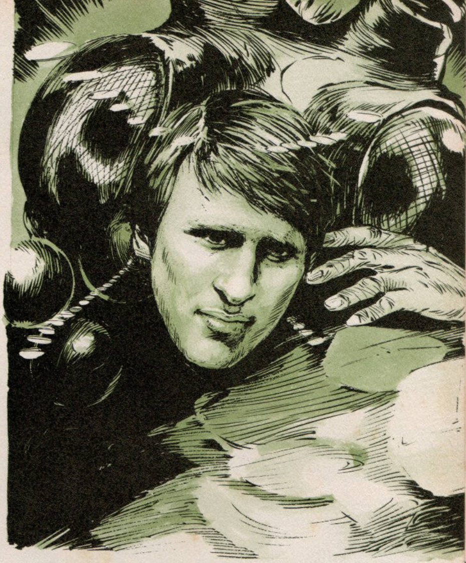
Just at that moment, Adric and the Doctor were seized tightly by two pairs of shiny brown pincers. They were held fast in the iron grip of two huge, brown, earwig-like creatures . . .

"I suppose you're going to tell me that these things are just figments of my fertile imagination?" Adric asked, touching the shiny pincers.

"No, they're real alright," the Doctor answered. "These things *do* exist."

Adric just sighed resignedly; he really must be going out of his mind.

Still in the grip of the pincers, Adric and the Doctor were hoisted into the air and carried off through the forest. After a few moments Adric noticed that the Doctor was concentrating very hard on something, and he opened his mouth to speak. But the Doctor put his finger to his lips. "*Ssssh*," he said. "They are communicating telepathically."



The Doctor concentrated on the things he was understanding from the earwigs' thought transference, then repeated what they were communicating to Adric: "They are peaceful creatures, and wish us no harm. They ask only that we try to help them. They say that we must remain here in this cavern with them, because it is the only place where they can be safe from the creatures that prey on them . . ."

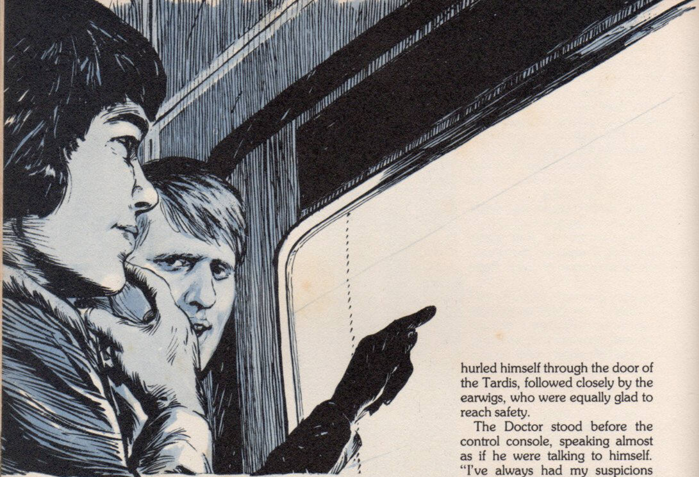
The Doctor's words were interrupted by Adric. "But we're not *in* a cavern – are we?" He looked around at the trees. "We're in a forest."

The Doctor's smile was one of infinite patience. "*I* know that," he said. "And *you* know that. But *they* don't. This – cavern – exists only in their imaginations. And these fearsome creatures that attack them from the air and carry them off (I presume some type of vampire bat) also exist solely in their imaginations. Don't you see?"

"No," said Adric. "I see only this horrific place."

The Doctor resumed his concentration as the earwigs communicated further. "They say their space craft crashed here some years ago, and they haven't been able to repair it because every time they leave the cavern they are carried off by these bat-things that terrorise them. They don't hold out much hope of ever getting off the planet."

"Then what hope do *we* have?"



"Lots," the Doctor answered. "And the first thing we have to do is to get back to the Tardis. I'll thought-transfer to the earwigs and tell them to follow us – after they've put us down, of course. Come on."

Soon the Doctor and Adric were hurrying through the trees, followed by the band of earwigs. For Adric the short journey was like an endless nightmare, with new terrors at every step. Filigree-fine spiders' webs wrapped themselves around his face, and the wing-beats of enormous moths almost knocked him off balance as they swept by in the gloom. Beady, staring insect eyes as big as lorry wheels peered from every direction, and tapering, claw-topped arms and legs clutched at him as he hurried by. The slitherings and scurryings of the insect-monsters that surrounded him could be heard from every direction. His progress through the trees would have been faster if it had not been hampered by his instinctive drawing-back as each new horror appeared before him.

The earwigs suffered just as much as Adric. They ducked and scuttled here and there, pressing their glistening bodies flat against the rotting carpet of leaves, as though trying to make themselves invisible to the creatures that pursued them. They cowered for cover, then scurried on past Adric, though he could not see the sky-borne monsters that assaulted them.

And the Doctor? He walked on purposefully through the trees, quite unconcerned, as though taking a pleasant afternoon stroll. It seemed to Adric that the Doctor really was completely unaware of the horrific creatures that surrounded them . . .

At last the strange procession reached the Tardis, which was still covered by the silvery snail-trail. But the slug itself had gone, leaving behind it a wide, mucous band that meandered off through the trees.

"What a relief!" said Adric, and hurled himself through the door of the Tardis, followed closely by the earwigs, who were equally glad to reach safety.

The Doctor stood before the control console, speaking almost as if he were talking to himself. "I've always had my suspicions about this place," he said. "Everyone I know who has been here has reported various horrors – man-eating plants, powerful quicksands, gigantic spiders and the like – and now we have your super-size forest insects, Adric. Not forgetting those bat-things that have been troubling the earwigs. Thing is, they couldn't possibly all exist here on the same planet. And they only appear to certain people – which is why I told you that they exist only in your imagination."

"But that slug! The centipede!" said Adric. "I saw them."

"No, you only *think* you did," the Doctor corrected. He turned a dial and beckoned Adric to the visual display panel. "There are the *real* inhabitants of planet Ixos-4."

Adric looked. The forest was still there, but instead of the monstrous insects that had been there before, there were now hundreds of quite small, grub-like objects. They did not move. "Simple creatures, with underdeveloped intelligence capabilities," the Doctor said. "Quite peaceful – and quite clever, in their own small way."

This time it was the earwigs' turn to protest – telepathically. "Yes, yes, I know that you lived in fear and trembling of those bat creatures," the Doctor nodded as he received their messages. "But they only existed in your imaginations. The bat things *are* all over the planet – and yet they are nowhere on the planet."

Adric frowned as he looked at the grub shapes. "I think you'd better explain again, Doctor."

"The atmosphere of this planet is in itself a living, functioning organism," the Doctor began. "And it is an organism that is acutely sensitive to subconscious primal fears. Your giant slugs and insects, Adric, though very real indeed to you, were in fact just images dragged up from the very depths of your own subconscious. You experienced a fear that was porbably a very real fear to your ancestors thousands of years ago, when creatures like that *did* exist somewhere or other. Over the centuries those fears receded further and further into your inherited memory, but here on Ixos-4 they were dredged up and presented to you as living, breathing horrors."

"I believed they were there," said Adric, gazing at the screen in wonder. "They were so real."

"I know," said the Doctor. "The atmosphere on this planet was able to sense your deepest, most primal fears (fears that you didn't even know you had) and present them to your brain as vivid, living pictures. Just as it did with our earwig friends here."

"But why? I thought you said this was a peaceful planet."

"Simply a matter of defensive tactics. As I said, this is a peace-loving planet that wants to stay that way. The inhabitants want to be left alone. And these terrors that are conjured up for unwanted visitors ensure that Ixos-4 is left well and truly undisturbed."

"But how do we get off the planet?" Adric asked.

"Well, I'll have to formulate a neutralising attachment," the Doctor explained. "It will temporarily remove your fears – and the fears of our earwig friends here – and give them time to repair their spacecraft. Then we just leave, in the same way that we arrived. Simple, eh?"

Within a couple of hours the attachment was working and the earwigs, their fears allayed, got to work on their ship. When they were ready to leave the planet their leader communicated his thanks. The Doctor relayed his words to Adric: "He thanks us for our help, and says that he will destroy the neutralising attachment as soon as his craft is outside the planet's gravitational pull."

"So the life here won't be destroyed?"

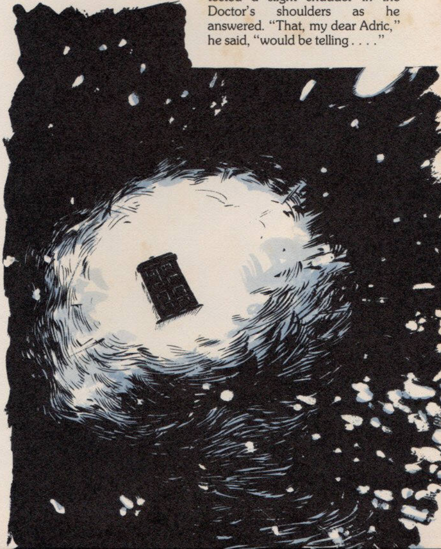
"No, simply put out of action for a while. The planet will function normally as soon as we're clear of its atmosphere. No need to destroy what is, after all, a harmless, peace-loving planet."

"I suppose not," Adric conceded.

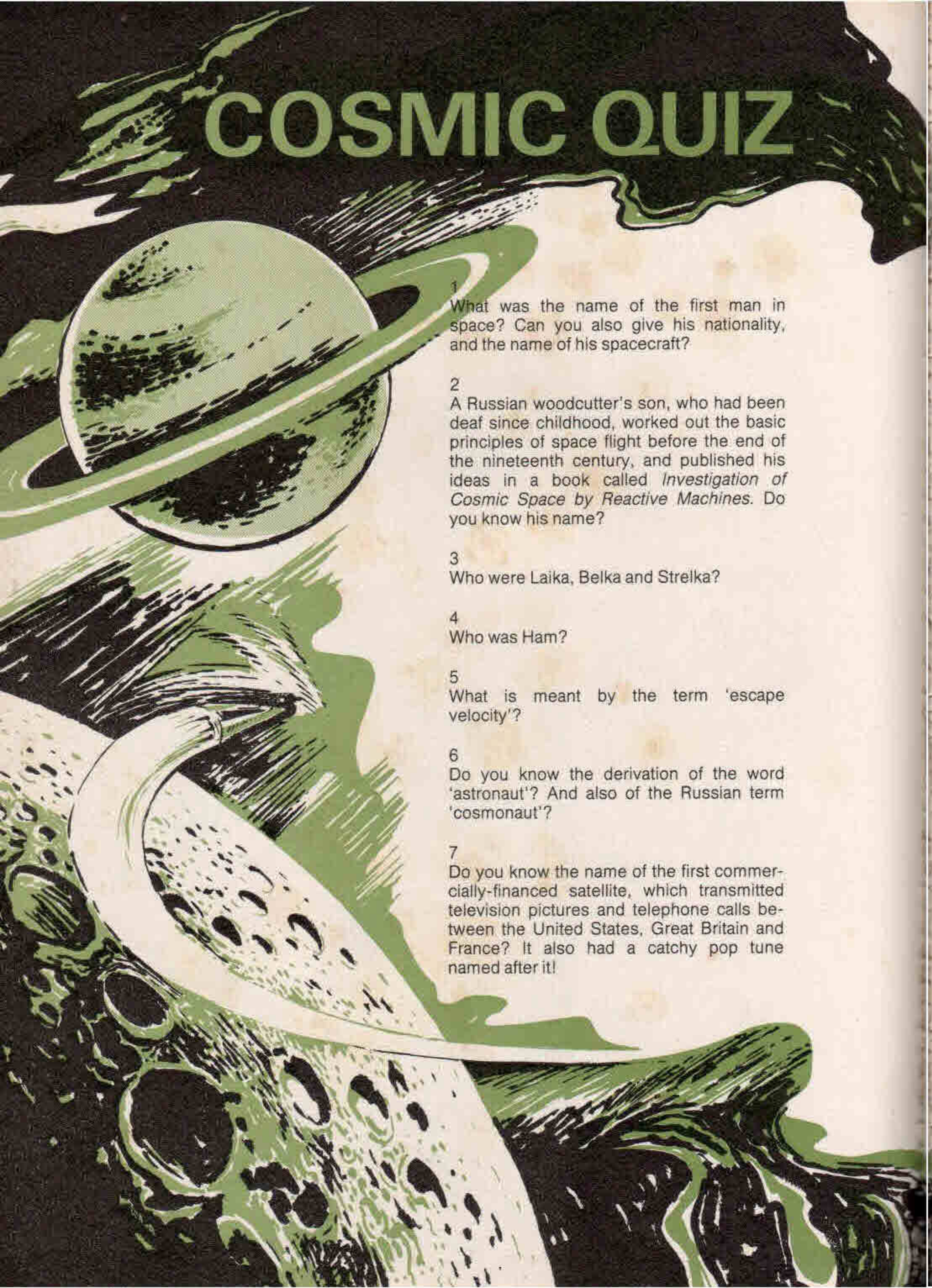
"Once we're out of the planet's atmosphere, you probably won't even remember what you saw here," said the Doctor. "Those fearful images will recede again into your deep subsconscious."

Soon the Tardis was heading away from Ixos-4. As it cleared the thick canopy of leaves that covered the forest, Adric turned to the Doctor. "I've just thought of something. If the atmosphere on Ixos-4 reflects the primal fears of everyone who visits the planet, what exactly did *you* see?"

The Doctor didn't even turn from the control panel to answer him, but Adric thought he detected a slight shudder in the Doctor's shoulders as he answered. "That, my dear Adric," he said, "would be telling . . . ."



COSMIC QUIZ



1
What was the name of the first man in space? Can you also give his nationality, and the name of his spacecraft?

2
A Russian woodcutter's son, who had been deaf since childhood, worked out the basic principles of space flight before the end of the nineteenth century, and published his ideas in a book called *Investigation of Cosmic Space by Reactive Machines.* Do you know his name?

3
Who were Laika, Belka and Strelka?

4
Who was Ham?

5
What is meant by the term 'escape velocity'?

6
Do you know the derivation of the word 'astronaut'? And also of the Russian term 'cosmonaut'?

7
Do you know the name of the first commercially-financed satellite, which transmitted television pictures and telephone calls between the United States, Great Britain and France? It also had a catchy pop tune named after it!

8
What are 'pitch, roll, and yaw'?

9
First it was called Cape Canaveral, then its name was changed to Cape Kennedy. What is it, and what is it called now?

10
There is one space travel vehicle which you won't find mentioned in any reference book, and yet it is known to millions of people as the most incredible of them all. It's the Tardis, of course! But do you know what the letters which make up its name mean?

ANSWERS

1. Yuri Gagarin, the Russian cosmonaut, orbited the earth in Vostock-1. 2. Konstantin Tziolkovsky, who lived from 1857-1935. 3. Those were the names of three Russian dogs who travelled in space. 4. An American chimpanzee in space! 5. It is the minimum speed necessary for an object to escape the Earth's gravitational force. It is approximately seven miles per second. 6. Astronaut is from Greek words meaning 'sailor among the stars', and cosmonaut similarly means 'sailor of the universe'. 7. Telstar. 8. They are characteristic motions of a rocket which can throw it off course in space. 9. The major American launch site, located on the east coast of Florida, has now reverted back to its original name of Cape Canaveral. 10. Time And Relative Dimensions In Space.